Thinking ahead. Driving forward. Leading the way.
Innovations North America
The perfect solution: innovation by Rexroth

All over the world, there are completely different ideas about "innovation": In industrial countries, it is mostly technology-driven, and is generally about "faster, higher, further". In other regions, it refers to solving a task using minimum resources and a design which is concentrated solely on functionality – only those who understand the local requirements and develop customized solutions on-site with researchers and developers can satisfy local needs in a global economy.
As a leading provider of Industry 4.0, Bosch Rexroth supports you with future-proof components, concepts and training courses, for seamless i4.0 integration, even with the Sercos & Multi-Ethernet connectivity strategy.

At Bosch Rexroth, regional developers work in a network in close collaboration with their international colleagues. The result is innovation in virtually every field of application and in all industries. They set worldwide standards and help customers on-site, every day.

For this to happen, we invest substantial sums of money and the creativity of thousands of engineers in research and development – year in and year out. Our R&D quota has been above the industry average for years. More than 2,100 specialists work at Rexroth on new products, solutions and services. They identify long-term megatrends which serve as indicators for changes in the markets, society and legislation. For instance, the "Internet of Things" has been in the spotlight for years. From this, we can systematically derive short- and medium-term requirements which we fulfill with developments based on known technologies.

At the same time, we continue to develop existing solution principles for the long term, or look for new approaches. This is why Bosch Rexroth itself also consciously acts both as a supplier and as a user in the field of machinery automation, for example. Previously, one of its assembly lines won the Connected Industry Award for the best networking of people, machinery and processes. The key to this lies in our consistent Open Core Engineering approach, the right components and optimal data networking at production level. Providing modules for this, which just continually improve – that’s the Bosch Rexroth goal. This is a requirement for innovation which we, as a worldwide market leader, also have in your industry.

Inside, discover some of the most important innovations of the past and next six months.
From the latest hydraulics solutions, to special interfaces for Open Core Engineering, to convenient online linear technology configuration wizards – this brochure provides an overview of innovations at Bosch Rexroth. Detailed descriptions of completely new developments and significant improvements. Technical highlights to help you increase productivity and reduce operating costs. Permanently. Get inspired.

In order to help you with the steadily growing networking required for Industry 4.0, we at Bosch Rexroth have developed a connectivity strategy called "Sercos & Multi-Ethernet". With Sercos®, we combine the i4.0 requirements for real-time, efficiency, multi-protocol capability and IT integration independent of the manufacturer. With Multi-Ethernet, we ensure the simple integration of controllers and components using the most common supplemental communication protocols. For a seamless i4.0 world.
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This brochure also contains product announcements. See your sales contact for more detailed information on availability.
Brilliantly simple: access to product information, web services and tools

Access to all product information, start-up wizards, hotlines, spare parts and even order requests at any time directly on the machine – Rexroth makes it possible by adding QR codes to our components and linking them to comprehensive online services. Everything you need to know about your product will be available with a click. Directly on your smartphone or tablet, automatically in six languages, and across every subject field. So you can make a decision faster.

"Service 4.0" – it couldn't be simpler!
Quicker access to all product information
This new service by Rexroth does not look like much – just a small QR code, sometimes just 7x7 mm in size, but it opens a door to an entire world of information. Looking for your nearest service contact? Need a manual? Or product data? Information about commissioning? Simply use your smartphone or tablet to scan the QR code and you’ll have all the relevant information about the product immediately at hand, and in the language version that you want.

Your key to our unique online services
The QR code is gradually becoming the master key, providing easy access to an unrivaled range of online services and tools which Rexroth already offers, and is constantly expanding. Thousands of device numbers have already been incorporated into the system and linked up. More are added every day. Linking your catalog to the mobile pages of your service department will make you even more flexible, even faster and even more capable. Simple and highly efficient.

Your benefits
- Faster access to product data, documents and catalogs in your language, and contact information near you
- Works with standard smartphones and QR code readers
- Even easier access to Rexroth online services and tools – across all divisions (hydraulics, control technology, drive technology, linear motion technology, assembly technology)
- QR code reader function incorporated into product-related Rexroth apps
- Automatic commissioning operations can be carried out using apps
- Links to eCatalog and eShop will allow for even faster action

Product QR codes are placed on the nameplate of the component or directly on the front of the device for visibility. This allows them to be easily scanned with a smart device.

Scan the adjacent code and find out even more about the QR code service concept by Rexroth.
Industry 4.0 and connected industry – The Smart Factory is now!

The definition of a Smart Factory is always changing. It’s not just about connectivity, but being smart at the core. What this means is that a Smart Factory has to be smart in a multitude of ways – from capitalizing on available talent and resources and acting environmentally responsible... to verifying work during the process and measuring and recording every detail. Simultaneously, there have to be processes and procedures in place to ensure data is useful and clear, to provide predictive capabilities, and to communicate in real-time to the right people and systems.
Hydraulics innovations: for better performance and consistent Industry 4.0-compatible engineering

From compact multi-speed drives, highly dynamic pilot-operated control and sandwich plate valves, the world’s first small ATEX high-pressure pump, the revolutionary CytroPac all-in power unit or consistent motion logic engineering tools – the system expertise of Rexroth can be felt in every detail of the latest hydraulic components. Intelligently perfected and completely networked to be future-proof. Why not experience the benefits yourself?
Sytronix variable-speed pump drives: save up to 80% energy with up to 20 dB(A) less noise

Sytronix, the combination of rugged hydraulics and efficient electronics, is the intelligent answer to increasing energy prices, cost pressure and strict environmental requirements. Compared to classic hydraulic concepts, with Sytronix you can control the speed of the pump drives as needed with intelligent drive electronics that feature state-of-the-art, customizable firmware and software. The Sytronix range is finely scaled: individual sets of pre-configured, function-oriented converters, motors and pumps with constant pressure system, p/Q control and axis control accessories.
### Overview of variable-speed pump drives

#### p
- **Sets for constant pressure systems**
  - Pressure control

#### p/Q
- **Sets for axis control**
  - Pressure control and flow control
  - Power limitation

#### p/Q, F/x
- **Sets for axis control**
  - Pressure control and flow control
  - Position control

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<tr>
<th>DRn 5020/7020</th>
<th>18.5 to 315 kW</th>
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<td>High overload capacity</td>
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<td>High control quality</td>
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<th>DFEn 5020/7020</th>
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<td>Optional HFC</td>
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<td>Multiple pumps</td>
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<td>High dynamics</td>
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<tr>
<th>FcP 5020/7020</th>
<th>0.4 to 18.5 (90) kW</th>
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<td>Very low noise level</td>
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<th>SvP 7020</th>
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<td>Position control</td>
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<td>Pressure control</td>
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- **New motors**
- **New drives**
SytronixSize: for faster and easier sizing of electro-hydraulics

With the powerful SytronixSize tool, Rexroth dramatically simplifies the design of electro-hydraulic power and drive systems. Handling is intuitive: the user is guided through data and selection screens and can size a system in no time with just a few steps. Calculations are based on the individual hydraulic and electrical components using models. It can show quiet and energy-efficient solutions at any time based on the specific application and user preference.

Design automatically, save time and money easily
A tool containing the concentrated knowledge of Rexroth specialists: with SytronixSize, hydraulic and electrical components can be quickly and easily sized using application-specific parameters. No data sheets required. Since the tool already contains all product-relevant data and models, the design process is automatic. When calculating energy needs, the tool always compares two conventional systems – the energy savings are shown directly. Noise emissions are evaluated via the load cycle. And at the end, you get a print-out with all of the relevant application information and the recommended components. Convenient, quick and easy.

Benefits of special product features
- Practice-oriented: application cycle factored in
- Energy-saving: component thermal loads are checked
- Up-to-date: always state-of-the-art
- Exact: precise and reliable results
- Comprehensive: pump, motor and drive controller size selection
- Practical: pre-defined sample applications

Key technical data
- Select from the entire Sytronix product range
- No installation required
- Several languages available
- Available offline
- Automatic updating
Sytronix DRn 5020 and FcP 5020 for constant pressure systems: affordable complete sets

The Rexroth portfolio for constant pressure systems received another powerful addition: based on variable displacement pumps and an optimized pump control, these cost-effective drive solutions are available specifically for small power units up to large systems. Suitable for standalone operation or Multi-Ethernet communication, the systems offer flexibility for integration into a wide range of applications.

Perfect for low dynamics
An ideal synergy of variable-speed drive and variable displacement pump is what makes the new drive sets for constant pressure systems so affordable and flexible to use. FcP 5020 was developed from the rugged EFC 5610 specifically for small power units. With direct mounting options for various sensors and easy assembly. The DRn 5020 allows torque and speed to be reduced in partial load operation, and with motor-friendly power limitation – for ideal consumption at all times based on installed power. By using standard DR and DRG pumps, the system can be easily retrofitted.

Benefits of special product features
← Affordable drive solution for low dynamic performance requirements
← Flexible configured sets
← FcP 5020: sensors can be connected directly to the converter – for simple wiring and speedy installation
← DRn 5020: optimized energy efficiency and installation space – through intelligent speed reduction and power limitation

Key technical data
← Nominal power: FcP 5020: 0.25 to 18.5 (90) kW (0.5 to 25 (125) hp); DRn 5020/7020: 4 to 315 kW (5 to 422 hp)
← AC induction motors with NEMA and IEC certification
← For use in constant pressure systems
← For open hydraulic systems
← Ethernet-based communication and Open Core Engineering
← Connectivity with Sercos and Multi-Ethernet
Sytronix SvP 7020 for p/Q control: more compact, more networked, more efficient

With the latest control unit generation of the SvP 7020, Sytronix has opened the door to new, future-proof possibilities such as Industry 4.0, remote maintenance and Open Core Engineering. These customized, compact solutions are easy to install and start up: These compact units ensure not only low noise emissions, but higher dynamic performance with energy savings of up to 80%.

Directly controllable, saves up to 80% on energy
Connect to the Open Core Interface, simply integrate in i4.0 environments for, e.g., querying actual values from Excel or operating Sytronix from MATLAB – this is all possible with the new SvP 7020 control unit. And with an additional servo converter and more compact motors, even smaller machines can achieve high power density with ease.

Benefits of special product features
- More compact: high power density even in smaller machines
- Future-proof: easily integrated into i4.0 environments, easily connected to Open Core Interface
- More energy-efficient and dynamic
- More practical: pre-assembled motor-pump assemblies with asynchronous or synchronous motor as needed
- Easier: installation and start-up
- Connectivity with Sercos and Multi-Ethernet, PROFIBUS and CANopen

Key technical data
- Max. effective power: 80 kW
- For use in axis control systems; open & closed hydraulic systems
- 2- and 4-quadrant operation possible depending on control mode and utilized pump type
- Scalable performance: with basic and advanced control units from IndraDrive building system
- Up to 150 mm less installation length: 25% more compact in upper power range
- Motor-pump assemblies (MPA) can also be ordered separately
Sytronix DFE: high power and high dynamic performance intelligently networked

The Sytronix DFE system sets consist of an electro-hydraulic-controlled axial piston pump driven by a variable-speed induction motor. By using standard motors of up to 315 kW (422 hp) combined with the highly rugged, proven SYDFE pressure and delivery rate control systems, an outstanding price/performance ratio can be achieved into the high power range.

Advanced Performance – great power and dynamics
Sytronix DFE reduces the load on the motor during pressure-holding operation. This means that ideally the electronic components can be designed to be smaller than in conventional drives. The system can be operated in two modes: in "teach-in" mode the cyclically recurring pressure and flow profiles are first stored in the electronics so that the system accelerates correctly prior to an increase in flow. In non-cyclic machines (e.g., wood processing/metallurgy), the real-time mode can be used instead. This involves the controller calculating the optimal combination of motor speed and swivel angle setting while the process is running. This maximizes energy savings.

Benefits of special product features
- Reduced investment costs due to simple retrofitting
- Good price/performance ratio in upper power range thanks to the downsizing of electrical components
- Versatility of use: available for A10 and A4 pumps
- Versatile networking with Multi-Ethernet interface in EFC converter
- Great performance

Key Technical Data
- Effective power up to 315 kW (422 hp)
- Use in open hydraulic systems
- Multiple-circuit and master-slave systems can be built up
- Power control: Constant pressure (p) and axis control (p/Q)
- 2-quadrant operation
- Connectivity with Sercos and Multi-Ethernet, PROFIBUS and CANopen
CytroPac hydraulic power unit: everything you need, fully networked

Lack of installation space is no longer an excuse to skimp on hydraulics power: Rexroth has radically redesigned power units up to 4 kW. Packed with everything you need for quick installation in a small space – including an economical Sytronix drive, completely wired frequency converter and Industry 4.0 interface. Just connect power, fluid and data interface, and that’s it. It doesn’t get more efficient.

**Key Technical Data**

- Max. pressure: 100 bar
- Max. hydraulic power: 4 kW
- Max. flow: 35 l/min
- Max. reservoir volume: 20 l
- Compliant with EU Directive 2009/125/EC
- Connectivity with Sercos and Multi-Ethernet


Simply revolutionary: with CytroPac, every function is integrated in the smallest of spaces and packaged for low noise. And high efficiency: the variable-speed Sytronix drive always adapts to the desired power. This saves energy – between 30% to 80%! This reduces CO₂ emissions and allows you to lower your operating costs while complying with EU Directive 2009/125/EC. The integrated frequency converter acts as the control center: ready for use with the wired pressure, temperature, fill level, contamination and flow sensors, it provides all data to the machine controller via a Multi-Ethernet interface. This gives you an overview at all times, and allows you to control and monitor everything in real-time.

**Benefits of special product features**

- Compact: space-saving, quiet design concept, ideal for machine tools
- Highly efficient: variable-speed Sytronix drive for on-demand power; latest heat pipe technology for water cooling
- Networked: completely wired frequency converter with Sercos and Multi-Ethernet interface; saves space and can even completely eliminate the control cabinet
- Practical: extensive sensors provide preventive condition monitoring in real-time; easy integration and start-up
- Future-proof: designed for use in i4.0 concepts
GoPak™ hydraulic power unit: build the exact hydraulic power unit you need

The GoPak HPU is the full-featured, next-generation successor to the RexPak™ power unit. Built from a complete and expanded portfolio of proven, high-performance Rexroth hydraulic components, the GoPak HPU delivers the highest levels of operational reliability and efficiency.

**GoPak HPU: The power you need**

GoPak HPUs deliver the reliable performance and flexibility that today’s industrial hydraulic users need. Compact and versatile, the GoPak unit features an expanded range of components and accessories to satisfy a diverse array of applications within its power range.

No matter what configuration your unique GoPak system takes, your new power unit will function with the highest levels of power and efficiency engineered into every hydraulic device we make.

GoPak units are available with a wide range of fixed and variable displacement pumps as well as an expanded portfolio of accessory devices. Every component has been pre-selected and tested by our applications engineering specialists to meet the highest standards of workmanship and reliability expected from Rexroth quality products.

**Benefits of special product features**

- Compact footprint conserves floor space
- GoPak’s performance range makes it well-suited for applications across multiple industries
- Expanded accessory portfolio
- Custom configurations

**Key technical data**

- Broad power range, from 1 up to 75 HP
- Pressures up to 4000 psi
- Flows up to 61 gallons per minute
- Reservoir sizes from 5 up to 200 gallons
SHA servo-hydraulic linear axis: self-sufficient, modular and optimally scalable

When Rexroth creates a new control axis using proven hydraulic and electric serial components, something great happens: a self-contained, completely pre-assembled servo-hydraulic linear axis for a variety of uses up to 2,500 kN. Modular design and practical scalability. Quickly installed and easily started up thanks to a single power socket and a single communication socket. All with outstanding energy efficiency and low noise.

Intelligent, connectable, proven.
The latest linear axes were developed to be absolutely practical and future-proof: standardized assemblies containing proven serial components ensure availability, optimal scalability and quick start-up. The IndraDrive controller with the latest Sytronix Position Force Control (PFC) technology package supports all common fieldbuses. The hydraulically optimized PFC software comes ready to use and performs all control tasks.

The SHA axes come completely pre-assembled and are tested by Bosch Rexroth. Just connect power and communications, and that’s it. The operating software includes special SHA functions – complex traversing profiles can be configured without major effort.

Benefits of special product features
← Modular and optimally scalable: thanks to standardized components
← Energy and noise reduction during part load and standby mode operation
← Easy start-up: completely pre-assembled and filled, controlled by IndraDrive software; electrical and mechanical interfaces only
← Self-contained and rugged: virtually wear-free operation; decentralized, closed fluid circuit

Key technical data
← Force range: 100 to 2,500 kN
← Max. traversing speed: 1,000 mm/sec
← Max. stroke: 1,800 mm
← Connectivity with Sercos, Multi-Ethernet (PROFINET, EtherNet/IP, EtherCAT, POWERLINK) and CANopen
← Pressure, temperature, efficiency condition monitoring
The new A10/32 size 45 high-speed pump, equipped with best-in-class standards in pressure and flow control, and power limitation, saves space, energy and costs. Available in all DFE system models. Paired with new Multi-Ethernet communication for a modern, energy-efficient pump system.

Saves space, energy and costs
The A10/32 series of Rexroth axial piston pumps, proven under the harshest conditions, has been expanded to included the size 45 high-speed version. With the various electronic versions, they are an unbeatable pairing.

The increased speed (up to 3,000 rpm) allows for a down-sized pump. It is also possible to reduce installed power with the variable pump. This saves you valuable installation space and reduces investment and operating costs. All this with the usual proven pressure, delivery rate and power control precision.

Benefits of special product features
- Compact: space-saving and cost-reducing with down-sized pump and electric motor
- Energy-efficient: reduced installed power
- Open: connectivity with Sercos and Multi-Ethernet
- Powerful: higher max. speed
- Rugged: proven pumps and on-board electronics
- Variable: pressure control, flow control, p/W control, power limitation (optional)

Key technical data
- A10 series 32 size 45 high-speed
- Speed: Max. high-speed: 3,000 rpm
- Max. flow: 135 l/min
- Nominal pressure: 280 bar
- Analog, digital communication
- Connectivity with Sercos, Multi-Ethernet (PROFINET, EtherNet/IP, EtherCAT, POWERLINK and VARAN)
CIMSmart: measure and monitor piston position and temperature without contact

Bosch Rexroth’s Cylinder Integrated Measuring System (CIMS) leverages unique technologies, including the Enduroq 2000 series rod surface technology, to provide a highly-accurate, reliable and long-lasting measurement of large hydraulic cylinder motion and other useful performance data, even under the harshest conditions (such as on the high seas), and completely without contact. Reliability with proven Bosch Rexroth quality.

Plug-and-play: easy to install, easy to analyze

Advances have been made in the CIMS technology to capture and store additional information about the LHC. Called CIMSmart, it leverages the capabilities of the CIMS technology, developed over 20 years, to provide data on operating temperatures, stroke distribution and total travelled distance, as well as multiple types of historic data about the usage of the LHC.

The latest generation has been developed in close collaboration with experts at Bosch. State-of-the-art technology has been refined and optimized for the harshest industrial environments. The result: a contactless, highly precise measuring system that is easy to install, automatically compensates for external factors and whose status can be easily monitored at all times. Whether temperature or piston position – you are always informed. And you can avoid unforeseen standstills.

Benefits of special product features

← Preventive monitoring: simple diagnostics and optimization for less downtime and greater availability
← Contactless measuring: piston and sensor are not impeded in any way and can operate reliably in the harshest conditions
← Easy installation and startup: plug-and-play without manual calibration
← Interchangeable with CIMS Mk II and Mk III with 6-pin to 9-pin connector upgrade
← Diagnostic output and performance monitoring via PC or PLC connections

Key technical data

← High precision: non-linearity < ±1 mm
← RS-422 output signal (1,024 pulses/cm)
← Wide temperature range from −40 °C to +70 °C
← High pressure resistance in (sea)water (IP68, 10 bar)
← Certified for potentially explosive environments (ATEX Zone 1 optional)
2WFCE built-in throttle valve: more pressure, more power, more applications

With newly integrated digital electronics, the compact 2-way proportional throttle valves open up entirely new possibilities: with pressure ratings up to 420 bar, extended temperature range and optimized controller structure, you can now have greater power, dynamics and control quality in your applications. All with proven design and precision.

**Complete, calibrated unit with the latest electronics**
Next to the unique pressure rating of 420 bar, the many optimized features make the latest 2WFCE throttle valve very practical. You get a fully configured, compact unit, calibrated at the factory, FEM-optimized, with integrated electronics and electrical position feedback. Optimize your controller parameters or output status information with ease, ensure the highest control quality, greater power density, shorter cycle times and the flexibility for new, extended applications – especially in systems that require greater power in a smaller space.

**Benefits of special product features**
- Integrated electronics for better control and signal quality, and less hysteresis
- Increased pressure ratings for extreme power density, smaller system components, more applications
- Improved valve dynamics for greater control quality, shorter cycle times
- Proven compact design as a complete unit for quick practical application and reliable signal processing

**Key technical data**
- Max. operating pressure: 420 bar
- Max. ambient temperature: +60 °C
- Max. rated flow: 1,600 l/min at 5 bar Δp
- Hysteresis: < 0.1 %
- Response sensitivity: < 0.05 %
Z2DB/Z3DR sandwich plate valves: more power, more possibilities, fewer costs

The new direct-controlled pressure limitation and pilot-operated pressure reduction valves are the new benchmark in sandwich plate valves: with better performance (max. pressure up to 350 bar) and more applications (ATEX-compatible). These new valves are also highly responsive, quiet and stable, even with increasing flows.

350 bar max. pressure, increased productivity
With these vertically stackable pilot-operated or direct-controlled valves, Bosch Rexroth brings a new generation of sandwich plate valves to the market. They feature not only improved performance data, but also more application opportunities – ATEX compatibility means special types are no longer necessary; the anti-corrosion version means additional rust protection is also no longer required. Two or three selectable adjustments, measuring ports in Channel A, B or P, ISO 4401-03-02-0-05 connection diagram. The valves are highly responsive, operate quietly and are largely leakage-free. Integrated shock absorption creates extremely stable operation and low pressure build-up with increasing flow. All at a very attractive price.

Benefits of special product features
← More power: 350 bar max. pressure for increased productivity
← Safer: approved for use in ATEX zones with ignition risk analysis (no special types necessary)
← More rugged: optional corrosion protection
← More cost effective: attractive price/performance ratio

Key technical data
← Sizes: 6 and 10
← Max. pressure: 350 bar
← Flow: max. 60 l/min (size 6) and 120 l/min (size 10)
← For fluids: HL, HLP, HFC, HFDU, HFDR, HEPG, HEES, HETG, etc.
← Approved for use according to ATEX Directive
4WRLE-4X directional control valves, sizes 10/35: powerful and dynamic control

Total electrohydraulic control: the latest pilot-operated control valves are ideal for all moderate- and high-dynamics application – including the most demanding tasks as well as position, speed, pressure and force control. With high flow and a max. pressure of 350 bar, they are designed for a wide range of practical applications.

**Key technical data**
- Max. operating pressure: 350 bar
- Max. rated flow: 1,500 l/min
- Max. flow: 4,700 l/min
- Ambient temperature range: –20 °C to +60 °C
- Improved dynamic properties
  (jump response time and frequency response: -90 °)

**High volume, maximum pressure, extreme dynamics**
The latest from Rexroth are pilot-operated 4/3-way control valves with highly dynamic properties. Greatly improved product features allow them to master even demanding control tasks with ease. With a high flow of up to 4,700 l/min and a max. pressure of 350 bar, they guarantee fewer pressure drops, faster motion sequences, greater power density, and greater stability and control quality. You get increased energy efficiency, more productivity and use less space. All with maximum control.

**Benefits of special product features**
- Reliable: proven and robust design
- Secure: main valve control spool spring-centered in neutral or offset position
- High quality: pilot control valve control spool and sleeve in servo quality
- Versatile: suitable for the position, speed, pressure and force control
- Precise: high response sensitivity and low hysteresis
- Fast: shorter cycle times, greater productivity
- Flexible: with GoTo coverage for immediate delivery of preferred types
IAC multi-Ethernet control valve: high-precision, simple operation, and flexible adjustment options

Rexroth is expanding its IAC multi-Ethernet product portfolio with a pilot-operated control valve featuring an integrated axis controller. The robust and user-friendly valves are enhanced with optimized hydraulic controllers, are individually scalable, and support all commonly used Ethernet bus systems. The IndraWorks engineering environment allows intuitive operation for quick and easy commissioning, parameterization and diagnostics.

Key technical data
- Connectivity with Sercos, Multi-Ethernet (EtherNet/IP, PROFINET RT, EtherCAT, VARAN and POWERLINK)
- Max. operating pressure: 350 bar
- Max. flow: 900 l/min
- Sizes: 6, 10 (direct-controlled); 10, 16, 25 (pilot-operated)
- Scan time: 0.5 ms for force controller, 1 ms for position contr.
- Feedback types: Analog (voltage/current), Digital (SSI gray code, SSI binary, Incremental or EnDat2.2) or 1Vss
- Safer stopping with 24 V signal and 24 V valve feedback

4WRPDH/4WRLD IAC Multi-Ethernet
Rexroth has acquired specialized know-how when it comes to understanding the correlation between hydraulics and motion control technology. This is the basis on which the control strategies for hydraulic and hybrid drives are optimized and translated into ready-to-use software. The result: highly precise, highly flexible, best-in-class hydraulic controllers. With a wide range of valve and axis control functionalities, you can individually address the needs of your applications. Maximum precision and functionality minimize your technical risk while reducing start-up costs. It doesn't get much more efficient.

Benefits of special product features
- Integrated digital axis control functionality with position, force and pressure control, plus alternating position/pressure or position/force control
- Consistent engineering with the IndraWorks DS engineering tool: faster and easy start-up, all components and support from a single source
- Flexible scalability: large selection of different valve types for greater operational flexibility
- Rugged and reliable: extended temperature and vibration ranges
- Wizard-supported configuration (with recommended values)
Rexroth filter elements: Generation 5 featuring PurePower

Hydraulic filters can be overlooked when designing today’s systems, but this common mistake can cause serious problems in hydraulic circuits. Rexroth has taken the next step in system protection with PurePower, a high performance fiberglass filter media that features increased dirt holding capacity and a built-in conductive layer. Together with the cyclone concept featured in new filter head designs, Rexroth is providing filters capable of extended life with reduced downtime, premium performance, and lower cost of ownership.

**PurePower: Longer service life and reduced operating costs**

Rexroth continues to push the envelope for high performance woven fiberglass filter material. For today’s hydraulic systems, it’s pretty typical to see 3 or 6 micron absolute filtration requirements to protect expensive equipment such as prop/servo valves and pressure compensated pumps/motors.

At the heart of the PurePower design is the ability to increase dirt holding capacity by up to 50% without a significant increase in pressure drop across the element or reduction in performance. The proprietary six layer design allows PurePower to be both durable and high-performing, without additional cost to the customer. Included in the PurePower design is a conductive layer not seen in previous designs. This conductive layer allows static electricity to discharge evenly, preventing electrostatic charge build-up and damaging discharges that can harm the filter material and hydraulic fluid.

**Benefits of special product features**

- High performance: up to 50% increase in dirt holding capacity and a built-in conductive layer
- Practical: reduced element changes for the customer and lower ownership costs
- PurePower elements when combined with cyclone design housings result in maximum dirt holding capacity
- Flexible: PurePower elements can fit competitive housings so customers can enjoy the benefits of PurePower without changing out existing housings

**Key technical data**

- Available in 1, 3, 6, 10, and 20 micron absolute ratings
- Six layer construction includes three filtration layers, pre-filter, intermediate filter and main filter
- Inner layer constructed of stainless steel mesh for higher strength
- Conductive fleece layer is optimized for ash and zinc-free fluids that have reduced conductivity
- Test procedures according to ISO 3968, ISO 16889, and ISO 12103-1-A3
210/250 LD duplex filters: highly efficient 250 bar with pressure equalization

The new 210 and 250 series duplex filters now utilize the patented Cyclone Effect – for extremely effective filtering within the smallest space. Practical one-handed changeover with integrated automatic pressure equalization gives you easy and reliable control of operating pressures up to 250 bar.

Six sizes from 40 to 400: for smaller, lighter, more flexible filtering
The patented Cyclone Effect is also being used in the series for pressures of 250 bar. Highly effective, state-of-the-art filtration of microparticles and extensive contamination: efficient, compact and inexpensive with more time between replacements. The automatic pressure equalization integrated in the stop-cock changeover makes one-handed operation extremely easy and reliable. And the numerous ports give you the utmost flexibility.

Benefits of special product features
- Highly effective and powerful: better filtration, better collection, more time between replacements with the patented Cyclone Effect
- Compact: smaller, lighter – saves space and lowers costs
- Practical: one-handed operation with automatic pressure equalization
- Flexible: broad selection of ports and fasteners

Key technical data
- Max. operating pressure: 250 bar
- Max. operating temperature: 100 °C
- Three sizes: 0040, 0063, 0100; with 2 ports: G1 and SAE 1" – 3,000 psi
- Three sizes: 0160, 0250, 0400; with 2 ports: G1 1/2 and SAE 1 1/2" – 3,000 psi
- Filter with SAE 1 1/2" port
  (max. operating overpressure: 210 bar)
- Patented Cyclone Effect
50FLDK duplex filter: ultra-compact and mega-clean thanks to Cyclone Effect

You can see from the outside what they filter out: the new 50FLDK duplex filters are highly effective in a very small space, due to the cyclonic flow path (patented Cyclone Effect). This keeps the overall design very compact, especially with the integrated pressure equalization which eliminates additional piping. You have never kept hydraulic fluid cleaner with a lighter and more compact filter.

Small, light and with numerous ports
The latest generation of 50FLDK filters deliver high performance in the smallest space. The state-of-the-art, patented Cyclone Effect filters out microparticles and extensive contamination with outstanding effectiveness. You can work more efficiently, save more energy, save more space, go longer between replacements and lower your costs. Standard pressure equalization saves you additional piping and the variety of ports and standard wall bracket keep you flexible at all times. This is how hydraulics filtration is done.

Benefits of special product features
- Highly effective and powerful: better filtration, better collection, more time between replacements with the patented Cyclone Effect
- Compact: smaller and lighter to save space and lower costs
- Flexible: broad selection of ports; wall bracket included, base optional

Key technical data
- Max. operating pressure: 50 bar
- Max. operating temperature: 100 °C
- Three sizes in DN65 to DN100: 0400, 0630, 1000; with 5 ports: SAE 2 1/2", SAE 4" and DIN flange available
- Three sizes in DN100: 2000, 2500; with 3 ports: SAE 4", DIN PN40/DN80, DIN PN63/DN80 and DIN PN40/DN100
- Patented Cyclone Effect
VT-HMC hydraulic motion controller: optimal control of electrohydraulic axes

The new VT-HMC motion controller is a digital control system featuring a built-in axis controller and IEC61131-3 programming. A motion logic system specially optimized for electrohydraulic axes – accessible programming and interfaces, future-proof scalability and consistent ease of use.

Best in Class: simple, open, scalable
"Simple" is the keyword with the VT-HMC: simple, highly dynamic control in all aspects (position, speed, pressure/force control, alternating control [position/pressure/force] and state feedback). Simple, seamless engineering. Simple communication and programming via open interfaces and commonly used bus systems for control, servicing and diagnosis. Simply better control of electrohydraulic axes.

Benefits of special product features
← Best-in-class hydraulic control functions
← Openness in connectivity: supports all commonly used Ethernet bus systems
← Simplified parameterization and operation with IndraWorks
← Feedback types: Analog (voltage/current), linear digital sensors (incremental or SSI [gray or binary]), rotary encoders (incremental or SSI [gray or binary])
← Initial parameterization wizard for hydraulic axes including pre-calculation of controller parameters for faster start-up
← IEC 61131-3 programming, simple and quick programming provides access to a wide range of functions

Key technical data
← Connectivity with Sercos, Multi-Ethernet (EtherNet/IP, PROFINET RT, EtherCAT, POWERLINK) and PROFINET
← Extended temperature range: –20 °C to +60 °C
← Scan time: 0.5 ms for force controller/1 ms for positioning controller
← Feedback types: Analog, Digital (SSI gray code, SSI binary, incremental or EnDat 2.2)
← Optional: IEC 61131-3 programming with extensive hydraulic libraries
The new and improved IndraMotion MLC is a motion logic system which is not only optimized for hydraulic drive tasks but can also be used to operate electric, hydraulic and hybrid drives. With open programming and interfaces, as well as scalable hardware and software, it is consistently easy to use and can reduce your engineering workload by as much as 50%. A function toolkit designed especially for hydraulic drive tasks is just one of the many helpful features.

**Quick programming, project planning, and commissioning**
Every detail of the new IndraMotion MLC is the result of the know-how obtained from many applications: intuitive control of all drives; hydraulic axis modules that support many feedback types (analog, incremental, or SSI); easy, wizard-supported configuration; scalable open controller interfaces. IndraWorks enables you to control all your drives, no matter what technology they are based on. You save time in programming, project planning, and commissioning, as well as in tracing and rectifying faults.

**Benefits of special product features**
- Best-in-class hydraulic control functions: position, pressure, speed, and force with changeover control (position/pressure/force); state control and comprehensive synchronization functions and variable-speed pump drives
- IEC 61131-3 programming, simple and quick programming provides access to a wide range of functions
- Automatic code generation using GAT template or the Axis Interface which bundles PLCopen function modules into an easy-to-use interface for drive functionality; less programming effort and more powerful commands speed up application development
- Supports S20 2-axis module and 4-axis block for hydraulic drives
- Initial parameterization wizard for hydraulic axes including pre-calculation of controller parameters for faster start-up

**Key technical data**
- Central control of up to 32 hydraulic axes
- Connectivity with Sercos, Multi-Ethernet (EtherNet/IP, PROFINET RT) and PROFIBUS DP
- IEC 61131-3 programming with extensive hydraulic libraries
- Scalable control system based on IndraControl L and XM hardware
- Flexible, hydraulic-specific axis I/O in a modular or block design
HEDE10-3X pressure switch: handles 60 million load changes with ease

The electronic pressure switches operate not only quickly and precisely, but also reliably – the compact switch was tested with 60 million load changes without one single issue. While this increases both service life and operational reliability, you benefit from cost-effectiveness.

Compact, fast, accurate
The new pressure switches are used to measure pressure in hydraulic systems. And they do this with speed and accuracy: with extremely fast response times under 3 ms and characteristic curve deviations of less than 0.5%. They also come in an extremely compact housing, which saves you space. Even under adverse conditions: these rugged switches have the IP67 rating and guarantee low failure rates across a long switch life.

Benefits of special product features
- Efficient: tested in up to 60 million load changes for long service life and high operational reliability
- Fast: extremely fast response time for rapid control and better production quality
- Precise: thanks to low temperature sensitivity and minimal characteristic curve deviation
- Rugged: IP67 rating for low failure rates
- Simple: compact design saves space

Key technical data
- Pressure ranges: 0 to 100/250/400/600 bar
- Characteristic curve deviation: < ±0.5%
- Ambient temperature range: −20 °C to +80 °C
- Signal rise time: < 3 ms
- Hydraulic port with female (G1/4i) or male thread (G1/4a)
- IP67 rating
HPC hydraulic pump controller: more intelligent control – simple, open, scalable

Better control quality, better hydraulic energy efficiency – with the new cabinet-based HPC control electronics, these are now standard. The best-in-class pump controller gives you one tool for every engineering task: simple, open for networking via numerous bus communication interfaces and flexibly scalable for your needs. In short: intelligently future-proof.

**Multi-Ethernet connection: simpler control of A4 axial piston pumps**

Automation made easy: the best-in-class HPC pump controller can be incorporated into any structure using a Multi-Ethernet interface – for creating open, future-proof machine concepts. Planning, visualization or diagnostics, you can do it all with the cross-technology IndraWorks engineering environment. You have never had easier access to your digitally controlled pumps. With these intelligent HPC controllers, you can even reduce installed power, peak loads in power consumption and even average energy consumption. Could it get any better?

**Benefits of special product features**

- Simple: take on any engineering task with a single tool (IndraWorks)
- Fast: easier start-up, better dynamics
- Open: Sercos and Multi-Ethernet connection to existing control architecture, simple diagnostics, quick service thanks to Ethernet-based TCP/IP service interface
- Flexible: scale functionality and communication with ease in the software

**Key technical data**

- Connectivity with Sercos, Multi-Ethernet (PROFINET, EtherNet/IP, EtherCAT, POWERLINK) and PROFIBUS
- TCP/IP service interface
- Pressure and swivel angle controller with torque limiter
- Extended temperature range: −20 °C to +60 °C
- CE mark as per Directive 2004/108/EC
A4CSG variable pump, sizes 40 to 180: the world's first small ATEX high-pressure pump

There has yet to be an ATEX model like this: small, powerful, closed-circuit high-pressure pumps in sizes 40 to 180 cm³. This completes the one-of-a-kind Rexroth platform of small, explosion-protected axial piston pumps for up to 500 cm³, whether 2G or 3G. For new areas of application, for precise control of entire ATEX systems with compact and efficient units.

**Saves energy, saves money**
Proven technology meets greater safety: the latest generation of small ATEX or IECx high-pressure pumps is setting the standard. With a highly efficient design, any mechanical-hydraulic control is possible, even in explosive environments; EP controller also available for electrohydraulic control. An optional position transducer allows you to control entire ATEX systems precisely and efficiently, improving safety standards. This saves you money.

**Benefits of special product features**
- Flexible: complete range of small ATEX pumps in the device group II (2+3)G bck IIB T4 under Directive 94/9/EC
- Precise: control entire systems with precision using AWXFE004D01 position transducer
- Universal: mechanical-hydraulic and electrohydraulic controls (with EP controller) possible, ATEX- and IECx-compatible
- Proven technology: rugged, precise, energy-efficient – and reliable

**Key technical data**
- Max. nominal pressure: 350 bar
- Sizes: 40, 71, 125, 180 cm³
- Max. speed: 1,800 rpm (higher speeds during testing)
- Through-drive with 100 % torque for tandem pumps
- Optional: EP controller (ATEX or IECx) and ATEX position transducer
Axial piston pump A1VO: more control for less money

More power at less cost – that was the idea behind the development of the new A1VO variable displacement series. Summarized nicely: a high level of control quality, efficiency and power density in the smallest of spaces. You won’t find better value for money in the medium pressure range. In many applications it’s a better option than fixed displacement pumps.

Medium pressure, maximum power
Behind its compact, cleverly designed housing the A1VO is brimming with ideas which make these medium-pressure axial piston pumps unique: despite running at constant speed their energy efficiency is excellent – better than any fixed displacement pump. The integrated control system operates without any bypass losses, which means that little, if any, cooling is needed.

Control quality, efficiency and power density levels are very high, whereas the noise level is very low. And costs have been minimized throughout.

Benefits of special product features
⊂ Compact: highly cost-effective design
⊂ Energy-efficient: more economical than fixed displacement pumps despite the constant speed
⊂ Variable: variable displacement
⊂ Precise: excellent control quality
⊂ Quiet-running: low noise level
⊂ Cost-effective: best value for money in the medium pressure range

Key Technical Data
⊂ Sizes 18, 28, and 35 cm³ displacement available
⊂ Pressure controller (hydraulic /electro-hydraulic)/pressure/flow controller
⊂ Operating pressure up to 250 bar
⊂ Permitted drive speed up to min. 3,000 rpm
Axial piston motor A2FM series 70: Compact design and high performance

Ambitious emission regulations require new engine generations to be equipped with modern exhaust gas after-treatment systems. As a result, hydraulic systems have less space available and its components have to be more efficient in order to maintain today’s productivity of working machinery. The Rexroth A2FM axial piston fixed motor series 70 offers answers: a compact design, high power density, a range of pressure levels and a variety of options.

Compact design and higher power density
The compact design of the Rexroth A2FM series 70 offers a higher power density than the series 61. The compact design is realized by several design measures such as an optimized rotary group, improved positioning of the port plate and the integration of flushing valves. For example, the A2FM series 70 with 90 cm³ is up to 26% shorter than the comparable product of the series 61 (with sidewise ports and external flushing valve).

High efficiency and high speed capability
Rexroth A2FM series 70 continues the success story of the A2FM series 61 and provides best in class overall and starting efficiency as well as high speed capability.

Different pressure levels
Rexroth A2FM is designed for use in a variety of applications such as concrete mixers, combine harvesters, mobile cranes, drilling equipment and rolling mills. These applications require different pressure levels.

Benefits of special product features
- Compact design with built-in valves
- Increased power density compared to series 61
- Three pressure ranges to fit to different customer requirements and applications
- High overall and starting efficiency
- Robust 40° bent-axis technology

Key Technical Data
- Three different sizes: 80, 90, and 107 cm³
- Maximum speed of 4500 rpm
- Several flanges for plug-in version and mounted version
- Service ports in different directions and versions
- Variety of shaft options
- Wide range of valves and sensors
- Additional sizes 45cc–107cc available as PT units
HYDROTRAC GFT Series 8000: The configurable travel drive for high-mileage mobile equipment

Made possible through years of hydraulic innovation blended with today's digital business practices, the new HYDROTRAC GFT Series 8000 represents a renewed focus on product performance and customer needs. From product configuration with the simple GEarARranger design application to easy installation thanks to product features like integrated disk brake and wheel studs, this transmission unit’s flexible design and compatibility allows it be delivered as a complete unit and ready to help your machine get up to speed.

More power to keep you moving forward
With around a ten percent increase in performance for wheeled or tracked mobile equipment, the GFT 8000 transmission unit increases availability and productivity for high-mileage machines like harvesters, bulldozers, sprayers and pavers. To perform well in these conditions, the drive unit must be rugged enough to handle the environmental factors, but also compact and powerful enough to perform well. To handle the torque requirements, the GFT 8000 offers the ability to integrate the A6VE series 71 motor which helps achieve total compactness and increased power density.

In addition to the functional Benefits of optimal gearbox and motor selection, this unit can be configured to your specification, built complete through a single plant, and delivered in less time.

Benefits of special product features
- Space-saving design thanks to optimized motor and gearbox ratio selection
- Wide selection of rated sizes, torques and ratios
- Delivery of complete transmission unit reduces logistics costs
- Quick, application-specific configuration using the all-new GEarARranger design tool
- Mechanical disconnect for towing purposes
- Maintenance-free dynamic braking option

Key Technical Data
- Rated sizes: 8110 to 8190
- Travel speed: up to 31 mph (50 kph)
- Torque range: 7,300...95,800 ft lb (10...130 kNm)
- Gear ratios: 25.2 to 167.9
- Motor compatibility: plug-in types A2FE, A6VE, A10FE
- Available options: wheel studs, mechanical disconnect, multi-disk parking or dynamic brake
- Further sizes as well as swing and winch drives are also available
CA10 to CA40 Hägglunds drives: Small but highly efficient power packs

Smaller, lighter, more powerful: the new Hägglunds radial piston motors feature extremely high power density and in a small size. With an optimal power-to-weight ratio and a wide speed range, you now have more ways to improve your machines using a proven technology platform. And the best thing of all: the next expansion stage is already in progress.

**Less weight, more torque, more flexibility**

The new compact Hägglunds hydraulic motors rely on a technology that has proven itself in the rigors of industrial operations, and they have been continuously enhanced to keep pace with the latest market developments. The result is power packs with unrivaled flexibility and an extremely wide range of applications: smaller than comparable motors but with a wider torque range from 8 to 40 Nm/bar, these highly efficient Hägglunds motors can be ideally adapted to your application. You will be hard pressed to find higher power density in a smaller space.

**Benefits of special product features**

- Minimal weight
- Wide speed range
- Trusted technology, low service life costs
- Optimal power-to-weight ratio for greater efficiency
- High level of torque with small size
- Compact design

**Key Technical Data**

- Specific torque characteristics: 8 Nm/bar (CA 10) – 40 Nm/bar (CA 40)
- Displacement: 503 cm³/rev to 2,513 cm³/rev
- Speed: 280 to 350 rpm
- Max. operating pressure: 250 bar
- Connections:
  - DIN 5480 N70 x 3 x 30 x 22 (CA10, CA20)
  - DIN 5480 N100 x 3 x 30 x 32 (CA30, CA40)
CCe 400 Hägglunds drive: true multi-speed drive in compact form

Wherever a small, robust drive with true multi-speed is needed, the new Hägglunds radial piston motor can show off its strengths. With a wide displacement range and practical configurability for a variety of loads, whether radial or axial. You have the freedom to design your machines to be simpler and smaller. And work at high efficiency.

Smaller, lighter, more efficient
The goal in developing the new, robust Hägglunds hydraulic motors was to cover more areas of application through the multi-speed feature. Highly flexible due to their stable design that can absorb axial and radial forces, they unlock every possibility for you to design your machines to be simpler and more compact, even in the toughest of conditions. The CCe motor can be perfectly adjusted to your application and power requirements thanks to switchable displacement. We call this practical multi-speed.

Benefits of special product features
- True multi-speed thanks to stroke adjustment
- Robust: designed for axial and radial loads
- Powerful: high torque with small size
- Flexible: compact design, minimal weight

Key technical data
- Displacement range: 7,550 to 25,100 cm³
- Max. continuous power: 1,350 kW
- Max. continuous torque: 130,000 Nm
- Max. speed: 100 rpm
DI4: robust and versatile

The robust DI4-mid has been developed specifically for use in mobile working machines and satisfies corresponding protection requirements regarding ambient temperatures, impermeability, shock and vibration and electromagnetic compatibility (EMC).

Programmable Function Keys
The display features an ergonomically arranged central push-turn control for fast navigation between screens or menus. The display has 12 programmable function keys (softkeys), as well as two function keys (hardkeys), which can have fixed functionality assigned to them across projects. In the PRO version, a capacitive touch screen is also available.

Gateway Access to RC Controllers
The DI4 Display can be flashed via BODAS-Service, faster via USB, or via Ethernet (PRO Version). DI4 displays can be used for access to the BODAS RC controllers, as a diagnosis and service interface for configuration. The parameters stored in the BODAS controllers can be read, changed and written back via the DI4 CAN interface. It’s possible to display the active and stored faults of a BODAS controller, as well as fault resetting. Update the display application software or the RC controllers via the USB interface.

Picture-In-Picture
The video interface allows direct connection of two PAL or NTSC video sources. The video signals transmitted from the cameras can be shown on the display as superimposed images (picture in-picture) or as full-screen, depending on the user interface configuration.

Benefits of special product features
- Mount either in dashboard, or with Ram Mount system
- Multi-colored status LED with integrated ambient light sensor

Key Technical Data
- 800 x 480 px. Resolution
- CPU: iMX6 Solo processor, 800 MHz
- Ram: 256 MB, Flash: 2 GB (eMMC)
- 2x CAN 2.0B Interfaces
- 1x USB 2.0 Interface
- 3x Digital/Analog Inputs
- 2x Digital Outputs
- 2x Video Inputs (PAL, NTSC)
- Rotary/Push-button Dial
**CChoose and compact hydraulics: the new configuration tool**

Cartridge valves and compact bankable valves have never been easier to apply and propose. Whether you’re a sales person, application engineer, or OEM designer, CChoose provides you with the technical and commercial tools you need to streamline concept realization and reduce your time to market.

**A variety of product solutions**

From concept to reality, this compact hydraulic assembly configurator allows you to CChoose everything you need to achieve success. CChoose gives the user the freedom to realize virtually any hydraulic circuit solution. By incorporating Bosch Rexroth’s cartridge and compact directional (bankable) valve product lines, CChoose provides an unparalleled variety of product solutions.

CChoose contains a vast library of Compact Hydraulics components with full catalog information and configuration error check. During the configuration, you’ll be helped by the software through the configuration steps, with constant check on project parameters and component details.

**Benefits of special product features**

- Drawing a hydraulic circuit from extensive drag-and-drop libraries
- Select component options with the help of embedded datasheets
- Actively check configurations with built-in error notification and warnings
- Quickly lay out a preliminary manifold design in an easy-to-use interface
- Report and export everything you’ve created in a variety of formats
- Installation software available to order on USB – USH00039

**Key Technical Data**

- Product libraries containing cartridge & bankable style valves
- Component model code creation from drop-down menus
- Drag and drop circuit design with standard symbols
- 3D preliminary designs of manifolds
- Export to common 2D and 3D CAD files
- Price indication feature
- Requires a PC with MS Windows XP, Vista, 7 or 8; Microsoft IE 6 or higher; NET Framework V.4.0 or higher; DirectX 9 or higher; 128 MB (256 rec.) video memory
Compu-Spread CS-530 and CS-550: innovative snow and ice control

The new additions to the Compu-Spread controller family deliver a series of new innovations for snow and ice control applications. The technology is intuitive both from the operator side as well as the operations. Rexroth’s integrated systems are designed to meet the specific and rapidly evolving needs of the snow and ice maintenance market throughout North America.

Compact, intuitive spreader controller technology
CS-530 is the new addition to the Compu-Spread spreader controller family of snow and ice control products and solutions from Bosch Rexroth. It is ideally suited for the control of the large range of Rexroth hydraulic valves and modules, which find broad usage in these demanding applications. The technology combines human/machine interface and spreader function control, all into one single compact unit.

The CS-530 controller is designed for two or three axis spreader applications, with manual control of one axis (Spinner) and manual, ground speed triggered manual, open or closed loop regulation of the others. It is built around a high performance 32 bit processor. And, built with an industry robust design to withstand the rigors – and temperatures – of winter.

Benefits of special product features
- Solid state 5.5” OLED display allows the screen to provide high contrast display even in sub-zero temperatures
- On-screen display of storm and season totals
- USB port provides controlled access to event logging and calibration, and firmware upgrades
- Fast installation set-up and calibrations are easily accomplished with on-screen defined parameters and navigation buttons
- Error messages are text defined with audible alarms

Key Technical Data
- A solid state 5.5” OLED display
- 3 frequency inputs
- 3 proportional PWM outputs
- 2 digital outputs 12 VDC
- USB key or password-protected calibration
- Automatic nulling and material calibration
- Solenoid and cable failure detection
- Firmware upgradable via USB
Key Technical Data
- 7" Wide VGA 800x480 pixels display screen
- 1.5 W amplifier with voice feedback
- 3 detented knobs, metal housing
- Encrypted security key for setup & data logging
- Auto-null, -Calibration, and -Catch Test
- Built in ground speed simulator
- Supports infra-red temp sensors
- Wiring with integrated molded diagnostic LEDs
- Firmware upgrade via an USB memory stick

Multi-function, modular spreader system
The innovative CS-550 controller is a highly modular CAN-bus based system for complete spreader function including spinner, granular, gate, pre-wet, and 3 boom anti-icing, as well as operation of cross conveyor, symmetry chute, and air gate controls, as well as joystick control for snow and ice applications. The system uses the rugged RC controller; both display and RC complying to the same rigorous electronic and environmental standards.

The CS-550 has an intuitive screen layout. Once system functions are selected all the spreader calibration is done on a SINGLE SCREEN. This can also be accomplished in minutes with a laptop computer from a remote location.

Benefits of special product features
- Display has built in USB/Serial/WiFi/GPS interface which allows for GPS tracking and USB wireless data transfer
- Flexible programing and compact design for ease of use and installation
- Field troubleshooting aids utilizing USB memory stick for easy controller access for system set-up and logged data retrieval
- Easy setup and operation

Find out more about Compu-Spread at:
www.boschrexroth.ca/cs
Innovations in the field of electric drives and controls: for maximum flexibility and improved efficiency

From the innovative linear motion system to one-of-a-kind multi-core CNC controllers or cabinet-free Industry 4.0 solutions, to total Open Core Engineering for individual real-time controllers – the latest drive and controller tools make your systems perform better, handle more easily and, most importantly, stay relevant where it counts.
I4.0 Solutions: legacy machinery gets a new life with IoT Gateway

Network new and existing machines cost efficiently and optimize production processes and product quality: The IoT Gateway makes it easy to connect to Industry 4.0 environments without intervening in the automation logic. The precisely coordinated combination of control hardware and software for implementing IT applications collects sensor and process data, transmits it to MES, cloud applications or local machine state monitoring systems, for example, and enables process data analysis.

The IoT Gateway – Coordinated hardware and software components
The combination of expert knowledge, software, and hardware provides you with a simple and cost-efficient way of networking your machinery and systems. With the Industry 4.0 Starter Kit, you can find out almost immediately how ready your production facility is for I4.0. You can then use the new information you gain to improve your production processes and product quality. The kit includes the IoT Gateway and Production Performance Manager. It’s the fast way to start an industry 4.0 project – through monitoring and analyzing production data.

Benefits of special product features

- Boost productivity and efficiency IoT Gateway
- Plug-and-run in three steps
- Modularity for individual requirements
- Future-proof with open software architecture
- Scalable and robust control hardware

Key technical data

- IoT Gateway: IndraControl XM21 or XM22, S20 IO plus Apps:
  - Inputs: S20 IO, AB and Siemens PLCs, OPC-UA/DA and OCI
  - Outputs: Bosch PPM and Sensor Cloud, Oracle Stream Explorer, MS Azure IoT Hub, MQTT and OPC UA
- Inputs/Outputs list growing quickly!
- SDK available for user configurability
- Rated for Industrial environment, same as machine control hardware

Software Development Kit (SDK) – for your individual applications

- An easy introduction to project planning using application examples
- Complete access to a wide range of functions
- Easy integration of the libraries with the corresponding development environment
- Full documentation of the API
- Customize the IoT Gateway to your application or analytics software
- Add Devices or Processes specific to your application
Open Core Engineering not only speeds up and simplifies your software engineering, it also gives you more freedom and flexibility for tomorrow’s production. State-of-the-art software tools and technology-oriented function packages based on international standards increase efficiency. With the Open Core Interface technology, you can connect your PLC-based automation solution to high-level language-based applications and the latest IT automation technology.

**Unique programming flexibility**
Open Core Engineering bundles the engineering portfolio for all software-based and intelligent solutions together with all drive and control technologies. Consistent software tools such as IndraWorks cover the entire engineering workflow, while function toolkits simplify the engineering of complex machine processes and allow for faster integration of new and innovative machine functions.
Benefits of special product features

- Flexible: universal engineering framework for all automation tasks
- Efficient: technology-oriented function packages for reducing complexity
- Innovative: implement new solutions by bridging the gap to IT automation
- Customized: OEM-specific real-time functions on control systems
- Future-proof: multi-technological solutions that support open standards and interfaces

Software tools

Covering every step in the workflow – from planning to programming, to parameterization, commissioning, and service. Open standards are consistently applied to all engineering and communication interfaces to secure the investment in and integration of future technologies. At the center is IndraWorks, the engineering framework: it provides all the basic tools for PLC-based automation, including the homogeneously integrated CODESYS V3. IndraWorks offers integrated operating based on the latest Windows technologies with centralized project management and wizard-supported project planning of control units, drives and peripherals.

Function toolkits

These expand the PLC-based engineering by means of function-oriented solution packages, accelerate the implementation of machine processes, optimize project workflows and enable the integration of advanced machine functions.

Examples of system-dependent function toolkits

- Generic Application Template: automated, template-based creation of machine projects
- FlexProfile: toolbox for the implementation of nonlinear motion profiles
- Robot Control: toolbox for the implementation of multidimensional motion control
- Safety Manager: programming of the integrated safety control system SafeLogic

Examples of system-independent function toolkits

- Automation Interface: for accessing project data
- Communication: for OPC/OPC UA communication
- Team Engineering: connects version control systems
- Visualization: for creating user interfaces (HMI)

Open standards

Open standards in machine automation are the basis for the flexible integration of software-based solutions into the engineering and system environments of the user and for the migration of new technologies into existing automation structures.

Open Core Interface and its benefits

The software tools and function toolkits continue to bridge the gap between PLC-based and IT-based automation with innovative interface technology. This gives high-level language-based applications on external devices flexible access to all control and drive functions.

- Extensive support for high-level language-based engineering platforms
- Customized production of smart apps, integration of smart devices in the automation of machines
- Simplified simulation and optimization of machine processes
- Simple connection to Windows-based IT automation applications
- Direct integration of real-time functions in the control system (system-dependent)
Open Core Interface for Controls: new degrees of freedom for connecting PLC and IT

With the expansion of the Open Core Interface for Controls interface technology you now have even more options when developing plant and machinery. The Open Core Interface for controls gives you direct access to all control functions. And as a perfect base: now with support for MathWorks, Modelica-based tools and programming in LabVIEW and Java. Take advantage of this freedom.

More options, more flexibility
Model-based engineering and rapid control prototyping offer new ways to increase engineering efficiency. Along with the software platforms MATLAB by MathWorks and LabVIEW by National Instruments that are already supported by Open Core Engineering, developers can now also use MathWorks Simulink and environments based on the open source modeling language, Modelica.

Open Core Engineering already caters for early phases of machine workflow with the option of integration in PLM tools.

Open Core Interface for Controls opens up new degrees of freedom for users to directly program control systems with flexible access to functions via high-level languages outside of IEC 61131-3. As well as support for the C/C++ for VxWorks languages, applications written in Lua and Java can be run directly on the control systems. Java, as the most popular enterprise application language, and Lua, a powerful, script-based interpreter language, allow M2M applications to be integrated into the Industry 4.0 vision.

Benefits of special product features
- Complete system of hardware and software components for rapid control prototyping and model-based engineering
- Accelerated time-to-market thanks to extensive support of environments such as MATLAB, LabVIEW, Simulink and Modelica-based tools, such as OpenModelica
- Innovative programming of, e.g., sequence-oriented applications with RobotControl in the interpreter-based script language, Lua
- Implementation of web-based or company-wide M2M applications based on Java
- Support for Node-RED and Node.js in IoT applications (Internet of Things)
Open Core Interface for Drives: directly connect IndraDrive to IT automation

Automation made easy: Open Core Interface for Drives gives IT automation applications direct access to all drive parameters – for all IndraDrive drives from 100 W to 4 MW, whether centralized or decentralized. The Sercos Internet protocol (S/IP) used facilitates standardized network communication at the production level. Simple, quick, flexible.

A consistent PLC and IT portfolio
The interface technology Open Core Interface for Drives enables machine control systems and sub-systems to be perfectly linked to devices, data and IT automation services. This opens up completely new degrees of freedom for you in relation to automation. High-level language-based applications on external devices are provided with flexible access to all the control and drive functions of IndraDrive.

Benefits of special product features
- High-level language programming with C/C++ and C#
- Smart device programming in C# with Microsoft Visual Studio plus Xamarin
- Expansion of operation and service concepts
- Direct Java programming for use in databases and MES systems
- Direct access to all drive functions, parameters and PLC variables
- Drive-controlled positioning and drive-internal interpolation using high-level language functions
- Use of WebConnector for Industry 4.0 protocols (MQTT, CoAP, LwM2M, etc.)
- Support for Node-RED and Node.js in IoT applications (Internet of Things)
- Implementation of web-based or company-wide M2M applications based on Java
- Accelerated time-to-market thanks to extensive support of environments such as MATLAB, LabVIEW, Simulink
WebConnector: universal interpreter between the web and automation environment

For Industry 4.0 applications, you need to have the right control centers in key places. Cross-platform, fast and easy-to-program communication interfaces ensure perfect dialog between the control and the HMI application. The new WebConnector connects your automation environment with stationary and mobile end devices more easily than ever: web-based, variable, modular and absolutely independent thanks to HTML5 and Java technology. Data networking made easy.

Quick, simple and platform-independent
With WebConnector, you can create custom, web-based HMI applications with ease: the high-performance WebSockets protocol gives you quick access to controls and drives without having to know the underlying protocol. An integrated web server allows you to integrate your own HTML websites on standard browsers without using additional plug-ins. And due to its focus on Java, the WebConnector is fully platform-independent, it runs on all operating systems for which a Java Virtual Machine is available. So you can directly manage all Rexroth’s components or those of third party providers using your smartphone or tablet. A fundamental building block of your data networking system.

Benefits of special product features
- Fast: access via WebSockets (JavaScript and .NET) to controls and drives, no detailed knowledge of the lower-level communication system required
- Integrated web server: for displaying HTML5 websites on standard browsers
- Independent: executable on any operating system for which a Java Virtual Machine is available (Linux, Windows, Raspbian, etc.)

Key technical data
- Communication interface for easy, custom HMI programming
- Variable number of control connections and possible HMI clients
- Modular use: directly on the control or HMI devices with a Java Virtual Machine
- Control connection via Open Core Interface or OPC UA
IndraWorks 14VRS: the universal tool for efficient engineering

IndraWorks is the first engineering framework that integrates CODESYS V3 into market and application maturity. With IndraWorks, Rexroth is showing the way forward in the engineering of motion logic applications with comprehensive wizards and high-performance solution tool boxes. So you make significant savings in terms of time, costs and programming workload – while quality is enhanced. Especially with the new version of the system.

**First end-to-end motion logic engineering tool**
As part of the range of Open Core Engineering solutions, IndraWorks is the universal engineering framework for Rexroth’s automation systems. It offers central project management and every tool needed for planning, programming, start-up, visualization and diagnostics. The enhanced basic functions and high-performance function toolkits in the new 14VRS system version quickly and efficiently implement your automation applications.

**Benefits of upgrades and function toolkits**
- Fully included in the basic functions: project planning, parameterization, programming, diagnosis, visualization
- Consistent operation: intuitive user interface based on current Windows technologies with central project administration and wizard-based support
- Generic Application Template function toolkit: simple, functional extensions of GAT program framework via plug-ins
- Application-based function toolkits: SafetyManager, RobotControl, Hydraulics, Visualization
- Extensive comparison functions: project, configuration, PLC program, online/offline
- New interface for bi-directional project data exchange between EPLAN electric P8 and IndraWorks Engineering 14VRS

**Key technical data**
- Uniform software framework – consistent engineering of all Rexroth control systems
- PLC and motion logic programming based on CODESYS V3 with object-oriented language extensions
- Comprehensive motion control functions: point-to-point, axis interpolation, robot control, CNC, hydraulics
- Simple integration: FDT/DTM, automation interface, connection to version control systems, EPLAN electric P8
IndraMotion MLC 14VRS: the complete system for all control tasks

The IndraMotion MLC automation solution combines motion, robot and logic control into a complete, uniform system for the first time. High-performance control hardware, rapid signal processing and innovative control cross communication allow you to choose freely between centralized and decentralized structures. You can easily adapt IndraMotion MLC to your application thanks to flexible hardware and software extensions. Standardized design and open standards allow you to synchronize all of your drive technologies with maximum performance.

Consistent, highly flexible, efficient
IndraMotion MLC uses the ideal platforms for modern automation: in addition to the scaled IndraControl L device family, the controller-based IndraControl XM2 control not only offers more computing power, it also provides high-performance and synchronous I/O processing in a more compact design. In addition to motion logic functionality in hard real-time, the new high-end IndraControl V IPC platform features a Windows operating system for additional tools. Open Core Engineering offers a perfectly coordinated tool chain for all engineering phases throughout the entire product lifecycle of the machine. The Open Core Interface bridges the gap to Industry 4.0 with direct access to all control system elements – for a new degree of flexibility.

Benefits of 14VRS system version upgrades
- Rapid I/O processing with IndraControl S20 – asynchronous, clocked, cyclic
- Safety Manager function toolkit: for programming the optional SafeLogic safety control
- Robot Control function toolkit: Lua script language for programming sequence-oriented processes
- Automation Interface function toolkit: new SDKs for automated generation of new projects, configurations and program sections in IndraWorks
- MATLAB/Simulink and Modelica: support for rapid control prototyping and model-based engineering

Key technical data
- PLC runtime system according to IEC 61131-3 based on CODESYS V3
- IndraWorks universal engineering framework
- Connectivity with Sercos, Multi-Ethernet and PROFIBUS
- Open Core Interface technology for high-level language-based applications
- Supports electric, hydraulic and hybrid drives
- Can be expanded with safety controller up to PL e/Cat 5 (EN ISO 13849-1) or SIL 3 (IEC 62061)
IndraMotion MLD 14VRS: add and change axes with ease

Improved communication between the drives: The new IndraMotion MLD 14VRS, with its modern IndraLogic 2G version of PLC editors, greatly simplifies the engineering tasks and provides all the additional functions for simplifying the automation of complete small systems with electronic and hydraulic drives. Hot-plugging drives during production maximizes flexibility, while the Sercos connection and the Open Core Interface ensure easy integration.

Dual master controlling: with Sercos and EtherNet/IP
Practical: Sercos and EtherNet/IP devices can now be easily connected using the same Ethernet port. IndraMotion MLD 14VRS is based on the scalable IndraDrive platform. High-performance motion control and PLC functions are combined to form a complete automation system for modern machinery concepts. Perfect for controlling gantry axes with the GantryPosControl toolkit. The newly integrated Open Core Interface for drives allows access to all drive and control parameters, as well as PLC variables. Open interfaces simplify automation. In short: efficient Open Core Engineering.

Benefits of Open Core Engineering extensions
- Visualization function toolkit: simple implementation of machine operation/monitoring now with WinStudio, compact IndraControl VR21 and OEM web server touchscreen controls
- Technology function toolkit: with winder/unwinder and tension controller, now with IndraLogic 2G
- Handling function toolkit: now with IndraLogic 2G (with pre-made HMI interfaces for compact control panels)
- New Generic Application Template (GAT) function toolkit: automatic code generation for framework applications with operating mode and error handling

Key technical data
- Max. 10 motion control axes
- Max. 4 peripherals connectable via Sercos
- Min. Sercos cycle time: 250 µs
- Min. PLC cycle time: 1 ms
- New version includes object-oriented programming according to IEC 61131-3 3rd Edition
- Connectivity with Sercos and Multi-Ethernet (EtherCAT [SoE, CoE], EtherNet/IP, POWERLINK)
IndraMotion MTX 14VRS: the unique multi-core CNC control system

Really multi-talented: the IndraMotion MTX is the unique, individually scalable CNC platform with integrated PLC for successful cutting and pressing concepts. Outstaanding performance data and extensive technology functions open completely new horizons, even for highly dynamic multi-technology machines. You can now control up to 60 channels and 250 axes with one CNC. For maximum productivity and flexibility.

Extreme performance with complex, multiple technologies
The proven IndraMotion MTX system has been consistently developed in the current software version 14. You now control up to 60 independent channels and 250 axes with one CNC that features extremely fast PLC and CNC cycle times. So you avoid incurring additional hardware and engineering costs. The 5-axis interpolation is now universally available for all models – for improved scalability. The new shape cutting function (laser, water jet, plasma) makes the IndraMotion MTX series even more universal for multi-technology processing in one machine. And with its open standards, it is even ready for Industry 4.0. Truly a complete package.

Benefits of special product features
- Multi-technology processing with 60 channels, 250 axes: bending, turning, milling, grinding, punching/nibbling, shape cutting, handling and rotary transfer with one CNC
- Great performance, even when maximum number of axes is used
- Improved scalability: 5-axis interpolation throughout the series
- Fast actions: fast PLC/CNC communication for reduced cycle times
- Open Core Engineering: for efficiency in engineering and customer functions
- Industry 4.0-ready: open standards such as OPC UA on board
- Practical: 3D online simulation with collision detection
- Future-proof: HMI multi-touch support

Key technical data
- Up to 60 independent channels with one CNC system
- Up to 250 axes in one CNC
- 5-axis interpolation from MTX micro to MTX advanced
- Multi-core CNC system (IndraMotion MTX advanced)
- Extremely short PLC and CNC cycle times
IndraMotion MTX micro: the first compact system with 5-axis interpolation

The most economical way possible to start using a CNC control. With the full range of functions. The new IndraMotion MTX micro provides everything that you need from small CNC machines. Now even a high-performance 5-axis interpolation facility can make its debut in the compact segment. The IndraMotion MTX micro is nevertheless extremely quick to start and, with a large library of technology cycles, is incredibly easy to program.

Compact and cost-effective, but with a full range of functions
Conveniently control up to 12 axes in 2 CNC channels, now in the compact class. Even including 5-axis interpolation. For extremely rapid, powerful and, above all, cost-efficient turning, milling, drilling, grinding, punching/nibbling and gear cutting. The new MTX micro series smooths your entry into the CNC world. It minimizes commissioning workload, it's extremely easy to operate, and it has comprehensive programming tools for even complex processing tasks. And it's ready for Industry 4.0 right now. The ultimate in economy!

Benefits of special product features
← 2 CNC machining channels: controlling processing and automation in one CNC system saves hardware costs and accelerates commissioning
← Extensive library of technology cycles: for simple, standardized programming of even complex processing tasks
← New control panels for horizontal or vertical use: for optimized ergonomics
← Industry 4.0-ready: open standards such as OPC UA on board

Key Technical Data
← Up to 12 axes, of which 4 are CNC spindles
← 2 CNC machining channels
← 5-axis interpolation (a first in the compact class)
← Extensive functions for turning, milling, drilling, grinding, punching/nibbling and gear cutting
← Optimized control panels for intuitive machine operation
IndraControl XM21/22: Flexible real-time control with a new modular extension, XFE

A new family of devices makes its debut: The new modular IndraControl XM control hardware combines the real-time capabilities of the Sercos automation bus with the new IndraControl S20 I/O family to form a modular and functionally complete control system – for all factory automation applications. With IndraControl XFE, Rexroth now offers modular extension options for performance class XM21 and higher. The concept allows up to three extension modules on a controller at the same time. Extend functionality easily and affordably.

Simple configuration, high-performance data processing
The IndraControl XM control platform is available for a variety of different motion logic applications. The local connecting circuit of the extremely fast, modular I/O assemblies of the IndraControl S20 expands the control system flexibly for high-performance systems & control data processing. The standard connection of decentralized I/Os, drives and other system peripherals is via Sercos. Optional extension modules, like IndraControl XFE, open up further integration options. Up to three modules can be flexibly added to the control on site. In addition to the existing communication modules, a Safety CPU and CAN module are newly available. As with every component in the IndraControl XM control family, the service-friendly design ensures easy installation and configuration.

Benefits of special product features
- Simple and flexible system configuration with modular I/O extension
- Complete control system with high-performance systems & control data processing
- Good real-time capabilities of the overall system
- Sercos used as universal automation bus for system-wide networking
- Flexible configuration of fieldbus connections (master/slave)
- Maintenance-free due to elimination of wear parts such as fans and batteries
- Optimal system integration into motion logic applications

Key Technical Data
- IP rating: IP20
- On-board Sercos Master with 250 μs cycle time
- Great control performance provided by Intel ATOM process architecture with 600 MHz or 1,300 MHz
- Gigabit Ethernet, USB, SD card slot, diagnostic LED
- Modular expansion options with extension and I/O modules, such as IndraControl XFE
- Extended temperature range from -25°C to 60°C
IndraControl XM2201: Robust hardware for extreme environments

Operating electric motors, hydraulic components and electro-hydraulic actuators reliably even under extreme ambient conditions: IndraControl XM is now certified for use on ships, offshore installations and in explosive atmospheres.

Proven in extreme environments
The environmental conditions on the high seas are already demanding enough, because the technology has to function simply, safely and reliably. Classification societies test the robustness and reliability of all components for shipbuilding and offshore operations. A specially optimized version of IndraControl XM, which is widely used in the industry, has now been certified by six classification societies for use on the high seas: the American Bureau of Shipping, Lloyd’s Register, Bureau Veritas, Det Norske Veritas / Germanischer Lloyd, Registro Italiano Navale and the Federal Maritime and Hydrographic Agency. The modular and expandable control solution is also certified according to IECEx (protection class Ex ec IIC T4 Gc) for potentially explosive environments and is suitable for the switchgear application on oil and natural gas conveying devices. Selected S20 I/O modules are certified to complement the modular control system for a complete automation system. Application examples include winches, tank ballast systems or drill main drives and drill position handling.
IndraControl FM: intelligent cabinet-free control

Everything on board for cabinet-free automation concepts: the new IndraControl FM control hardware combines machine PLC, I/O and Open Core Interface for your Industry 4.0-capable systems. You can install and start up completely separate, intelligent modules either directly or in the machine. A rugged IP65 rating, all the necessary interfaces and even quick integration of IoT services via Linux.

i4.0-ready: flexible connection, open integration
On the outside, the only thing noticeable about IndraControl FM is its compact hardware design that has been specially created for the increasing modularization in mechanical engineering. By omitting wear parts, such as batteries and fans, the controller is maintenance-free. The brains are on the inside: with versatile sensor/actuator interfaces and on-board Multi-Ethernet, you can flexibly and easily connect to heterogeneous automation topologies. Regardless of PLC programming, you can comfortably connect IoT (Internet of Things) applications using the freely programmable Linux operating system in SOA-based i.40 architectures. This gives you all the freedom you need for modern, future-proof systems today.

Benefits of special product features
← Cabinet-free: for rapid, decentralized installation and start-up
← Fast: high-performance process data processing via integrated PLC with min. cycle time of 250 μs
← Highly communicative: numerous sensor/actuator interfaces, on-board Sercos and Multi-Ethernet slave interface – for flexible automation
← Open: supports high-level language-based applications via Open Core Interface for drives; easy integration of IoT services via Linux
← Open Linux OS variant with IoT Gateway firmware
← Maintenance-free: no wear parts such as fans and batteries

Key technical data
← IP65 rating
← 36 analog and digital I/O modules for sensors, actuators and Modbus on board
← Multi-protocol-capable Ethernet interface (slave)
← Pre-assembled hybrid cable and/or M12 connector
← Power supply via hybrid cable (42 V DC) or I/O box (24 V DC)
← Standardized PLC functionality based on CODESYS V3
Sercans Sercos master module: connect drives and I/O devices to PCs with ease

You have never upgraded OEM controls with Sercos automation bus as easily or for less – with suitable scaled performance classes for all needs: the cost-efficient Sercans S is ideal for small and simple serial systems in packaging and processing, assembly and handling. Sercans M is the standard for most applications. And Sercans L, with a minimal cycle time of 62.5 μs, for large, complex, high-end systems.

Simple and cost-effective implementation
The new Sercans family is an easy and affordable option for implementing Sercos automation bus in controls. The new Sercans S model can be used in inexpensive PCs for cost savings. With firmware version 3, Sercos and EtherNet/IP devices can now be easily and comfortably connected to the same Ethernet port (with existing software stack for EtherNet/IP). So you increase your productivity quickly and efficiently. With the Sercans module, you can connect the IndraDrive drive family and the IndraControl S20, S67 I/O and Sercos devices from many suppliers to a PC with ease – and benefit directly from the Sercos properties.

Benefits of special product features
- Increased productivity due to short cycle times
- Reduced wiring costs thanks to safety functions being operated by CIP Safety on Sercos
- Exchange secure data with comprehensive safety peripherals for spread-out systems using CIP Safety on Sercos
- Minimal cycle times and high rate of data throughput to the host application (Sercans L)
- Ideal for using Tenasys, Linux with PREEMPT-RT-Patch and QNX Neutrino with the Intime real-time operating system
- Practical: connect any Ethernet user directly – without additional hardware
- Sample program in C programming language

Key technical data
- Sercans L: minimal cycle time of 62.5 μs; up to 511 Sercos devices per card and 2,000 per PC; system extension with up to 120 secure nodes via CIP Safety on Sercos per card and 480 per PC
- Sercans M: PCI and PCI Express interface available
- Sercans S: up to 10 devices and one card per PC
NY4114 high-performance multi-axis controller: controlling extremely fast movements with Linux

The modular NYCe 4000 multi-axis controller controls complex processes from a single unit. Including drive functions, simulations, and diagnoses. Specially designed for the low-voltage range up to 150 V with high motion control requirements, extreme speed and precision. The platform now has a powerful, open, Linux-based motion control unit for your Industry 4.0 applications.

Develop faster, control faster with Linux

The NYCe 4000 is a compact unit that offers unrivaled flexibility. With highly developed hardware for complex sequences plus an open software architecture. Powerful dual A9 processors feature maximum motion performance for MIMO control algorithms, user-specific special functions or MATLAB/Simulink controllers. The Linux operating system comes installed on the NY4114 and is the perfect platform for your application software. Use the open, Ethernet-based communication structure for simple integration into your networks. Not only can you obtain customized motion solutions more quickly, but the time to market is reduced considerably. This increases your production output and is Industry 4.0-compatible.

Benefits of special product features

- Fast: powerful 32 kHz servo control algorithms
- Customized: customer-specific motion upgrades, including MIMO at 8 kHz
- Highly flexible: integrable drive module with 15 to 150 V DC bus voltage for servo and stepper motors
- i4.0-compatible: open Linux operating system with real-time extension
- Shorter time to market: developer environments based on Visual Studio and Eclipse
- Programming in C, C++ and .NET

Key Technical Data

- Compact: integrated motion controller, drive modules and I/O interfaces
- Extremely fast: 32 kHz position control with numerous pilot control and filter options
- Motion unit with dual core A8 processors: 1 GB flash, 1 GB RAM, MicroSD flash and USB
- Linux operating system with Xenomai real-time extension
- Eclipse-based development and debugging environment
LMS linear motion system: complex transporting and positioning – precise, flexible, fast

The Linear Motion System (LMS) from Rexroth is a new, unique technical solution for transporting and positioning materials and workpieces. Where traditional rollers, chains or belt systems reach their limits for any reason, LMS is the perfect concept. It delivers higher accuracy, allows for freely programmable individual and synchronized movements, and is faster than traditional systems. A perfect module for i4.0 production.

LMS replaces traditional transfer systems
LMS is based on standard linear motor technology, in which each single workpiece pallet/carrier is moved individually. LMS components are easily integrated into your desired transport and positioning system and are extremely flexible. Carrier size and weight are scalable (1 kg to 1,000 kg) and the track layout is freely configurable. This saves space and costs, and facilitates flexible production. LMS is also maintenance-free. Building your machine just got easier. You now have every option for a future-proof i4.0 solution, even for a transfer system.

Benefits of special product features
- Easily integrated: freely configurable track layout, saves space and costs
- Flexible: scalable carrier size/weight (1 kg to 1,000 kg), individually controllable carriers
- Cost-efficient: transport system can act as handling axis for easier handling
- Autonomous: perfect for i4.0 solutions, for more flexible production
- Fast and precise: high throughput, high position repeatability

Key technical data
- Wide performance range from 60 N to 3,000 N
- Speeds of up to 5 m/sec
- Positioning accuracy of up to 10 μm (with encoder option)
- Magnetic disks standard or vacuum-compatible up to 10⁻⁸ mbar
- Temperature range up to 150 °C
IndraControl S20 for Safety: fast and safe automation

The fastest I/O technology in the market is now playing it safe: with the latest safety modules from the modular IndraControl S20 I/O component family, safe communication is now possible with CIP Safety or PROFINet. For safe and speedy automation, even for demanding applications.

Flexible integration, simple installation
The IndraControl S20 I/O range allows real-time applications with short cycle times. With new safety modules of the same frame size, you now have the right elements for your safety applications. Flexible usability due to the support of CIP Safety on Sercos or PROFINet. The safety modules can be combined with standard modules as required. Easy to install due to tool-free wiring, and easy to configure using the IndraWorks engineering tool. For constantly fast and safe signal processing. For maximum availability and time-saving, safe automation.

Benefits of special product features
← Certified: SIL 3 according to EN 61508, SILCL 3 according to EN 62061, Category 4/PL e according to EN ISO 13849-1
← High-performance: intelligent local bus with optimized data communication for clock-synchronized signal processing
← Simple installation: quick tool-free wiring, fewer errors
← Rugged design: for high system availability levels
← Easy to integrate: can be flexibly used without dependence on specific safety solutions

Key technical data
← IP20 rating
← Secure digital channels 8 (one-channel) or 4 (two-channel)
← CIP Safety on Sercos, PROFINet on PROFINET
← 10 g shock resistance (continuous shock) according to EN 60068-2-39
← Extended temperature range from −35 °C to +60 °C
IndraDrive with SafeMotion: the new generation of control units for improved productivity

No matter which IndraDrive series you are using – the new control unit generation for SafeMotion increases the productivity of every machine by extensive, drive-integrated safety functions. Start-up is quicker, safer, and more affordable now that the safe logic functions are integrated in the drive.

For all IndraDrive series
Whether simple "Safe Torque Off" or complex safety functions for motion "Safe Motion" – "Safety on Board" ensures the maximum level of safety in all models in the IndraDrive series. And it improves productivity wherever safe stopping, holding, moving and position monitoring is required.

Selecting safety functions via Sercos and Multi-Ethernet (CIP Safety on Sercos, PROFIsafe on PROFINET or Safety over EtherCAT) or integrating safe logic functions directly in the drive (no external logic modules) saves time and money. As well as device replacement without the use of a PC in the event of servicing. However, SafeMotion increases one thing above all: safety in your systems.

Benefits of special product features
← Comprehensive: drive-integrated safety functions for braking, holding, moving and position monitoring
← Flexible: select safety functions via CIP Safety on Sercos, PROFIsafe on PROFINET, Safety over EtherCAT or, optionally, via discrete 24 V signals
← Versatile: safe logic functions integrated in the drive
← Productive: enhanced machine productivity with reduced costs
← Consistent: for all IndraDrive product families: Cs, C, M, Mi, ML

Key technical data
← Maximum level of safety (Cat. 4, PL e, SIL3) for all safety functions
← Safe absolute end position replaces hardware limit switch by software
← 31 safe cam areas configurable
← Reduced commissioning effort due to semi-automatic support
← PC-free device replacement when servicing
IndraDrive ML: universal inverter now for marine and offshore

The new IndraDrive ML is the latest addition to the IndraDrive family in the upper power range: up to 500 kW individually, up to 4 MW when 8 devices are connected in parallel. New areas of application open up with additional devices for mains connections between 525 V and 690 V, as well as the marine and offshore certification. This is what turns these compact, modular inverters into real all-rounders – they can be used as mains inverters or motor inverters. This minimizes the number of models, simplifies handling and reduces your storage costs.

**Modular, compact and energy-saving**
These universal inverters are ideal for complex multi-axis applications. They are powerful, flexible drives for the megawatt range. With two voltage models and extensive certifications, they can be used for any standard or servo applications and come with a range of energy-saving options for perfect adaptation. They also come with all the usual features of the proven IndraDrive family – from certified Safety on Board to drive-integrated motion logic solutions, to multi-encoder interfaces and Multi-Ethernet communication. Simply universal.

**Benefits of special product features**
- Modular universal inverters for multi-axis applications: minimize model variety, simplify handling, reduce storage costs
- Application-optimized energy-saving concepts: flexible adaptation to any use saves energy and reduces grid load
- High power density: compact design saves space in the cabinet
- Less coolant at higher coolant temperature: allows for compact heat exchangers and efficient heat recovery
- Both voltage models are now certified for marine and offshore: for more areas of application

**Key technical data**
- Single device power of 110 kW to 500 kW with 8 increments
- System power of up to 4 MW with parallel connection
- Supply voltage: 3 AC 380–500 V/525–690 V/50–60 Hz/TN, TT and IT network
- Cooling types: fluid cooling, air cooling
- 1.5-fold overload for 60 sec
IndraDrive Mi: cabinet-free drive system with new cooling variants

The latest generation of IndraDrive Mi can be adapted to your environment like no other decentralized drive system. The drive allows 100% reduction of control cabinet. This makes it ideal for use in any modular machine – for maximum flexibility and minimal space. With up to 90% less wiring and 100% less cooling required.

Self-sufficient complete package with new cooling options
The brand new features of the IndraDrive Mi offer you complete flexibility. For example, when cooling: in addition to the thermal interface for cold plate or insulated mounting, models that utilize convection through a ribbed cooler and forced air cooling are now available. Multi-protocol capabilities mean that it can be used with any major control manufacturer’s products. Optional integrated motion logic combines drive, motion control and sequence logic so complex that motion sequences can be implemented purely at the drive level.

The hybrid cables for IndraDrive Mi now also come with round connectors whose slim geometry allow for smaller cable bushings in machines. These pre-assembled cables can also be routed through pipes.

Benefits of special product features
- Reduction of up to 100% in the size of the control cabinet: drive components fully designed to IP65 standard
- Up to 90% less wiring with hybrid cables
- Reduction of up to 100% in the control cabinet cooling power
- Connectivity with Sercos and Multi-Ethernet: compatible with all relevant Ethernet protocols and common controller products
- Motion-logic system integration option: achieving complex motion sequences at the level of the drive

Key Technical Data
- Up to 30 drives on one hybrid cable of up to 200 m in length.
- Connectivity with Sercos, Multi-Ethernet (PROFINET, EtherNet/IP, EtherCAT, POWERLINK)
- Integrated safety technology: Safe Torque Off/SafeMotion
- IEC 61131-3 integrated motion logic
- Peripheral connection: control communication uncoupling
- Variable cooling concept: thermal interface for cold plate or insulated mounting, convection cooling, forced air cooling
IndraControl VEP: brilliant for new operating concepts

Innovative operation and visualization requires the right components: the new IndraControl VEP embedded PC brings you one giant step closer in developing promising operating concepts for any area of application. With a powerful quad core processor, high-resolution and multi-touch-capable widescreen with anti-reflection coating, and models for the control cabinet or support arm, this panel PC is the ideal hardware basis for your new operating concepts.

Powerful and intuitive: embedded PC with multi-touch

An ideal combination: the capacitive touchscreen and brilliant 15" widescreen display make a perfect pair with the high-performance Intel Atom processor technology to make machines and systems easy to operate. Fast, flexible, intuitive. With two housing models, one for control cabinets and the other for direct mounting on a support arm, this powerful embedded PC will make you ready for any application. Your ideal basis for new operating concepts.

Benefits of special product features

- Ergonomic: intuitive multi-touch control for innovative visualization
- Brilliant: high-resolution widescreen display with anti-reflection coating for ideal readability
- Efficient: panel PC as the ideal HMI unit in the control cabinet
- Rugged: IP65 rated compact operator terminal for direct support arm installation
- Fast: powerful quad core processor

Key technical data

- Display diagonal: 15.6"
- Intel Atom Bay Trail CPU
- 4 GB RAM and 32 GB on-board flash memory
- 2 x Gigabit Ethernet
- 1 x USB 3.0 and 1 x USB 2.0 port
- Capacitive touchscreen
Frequency Converter EFC 3610/5610: universal uses, easily integrated

With their compact design, their freely definable U/f (V/Hz) characteristic curves, or alternatively vector-control functionality, synchronous motor operation and their scalable options including Multi-Ethernet communication, other fieldbus and I/O interface options, the further-improved family of frequency converters can be universally used in a wide variety of applications. They are simple to install, without the need of using additional peripheral devices.

Saves time and space – and enhances quality
Efficient speed control forms the basis of energy-savings and low CO₂ emissions – so these further-enhanced frequency converters have been filled with intelligent features to meet any engineering and application requirements. Compact with space-saving assembly features and clever option modules, and with all external components removed, they provide the ultimate in easy installation and space minimization. I/O and fieldbus options provide simple extension options. Ease of use is ensured not only through fast parameterization using autotuning, copy function or a PC (USB engineering port), but also by use of harmonized parameters throughout the series – which saves time, improves quality and facilitates series-production commissioning.

Benefits of special product features

- Compact: space-saving installation and wiring via standard DIN-rail mounting option up to 7.5 kW/10 hp and I/O plug terminals, as well as numerous option modules – so installation and integration couldn't be simpler
- Simply practical: removable operator display panel with memory function, optional LCD plain text display, simple parameterization using autotuning, copy function or USB engineering port to PC – for quick, reliable series-production commissioning
- Thoroughly flexible: configurable and extendable using I/O or fieldbus modules – for universal use and simple functions

Key technical data

- Performance range 1AC 200–240 V, 0.4–2.2 kW (0.5–3 hp), 3AC 380–480 V, 0.4–90 kW (0.5–125 hp)
- V/Hz control (EFC 3610) or sensorless vector control (EFC 5610)
- High starting torque (200%) and high overload (150% up to 60 s)
- Operating control versions: LED operator panel or external options like digital I/O, analog or fieldbus communication
- Built-in brake chopper and EMC filter (EN 61800-3 C3)
- Optional Multi-Ethernet-based communication (Sercos III, EtherNet/IP, PROFINET/I0, EtherCAT, Modbus TCP) and fieldbuses like PROFIBUS and CANopen
IndraDyn S – synchronous servo motors MS2N: intelligent, powerful, flexible

More torque, higher speeds, a practical single-cable connection and an extensive options program: The new IndraDyn S MS2N motor generation by Rexroth combines high dynamics with compact dimensions and excellent energy efficiency. A selection of rotors with lower and medium inertia is available for optimal alignment of motor and load inertia. The MS2N motors become a data source for intelligent solutions in the Industry 4.0 environment.

**More torque, more dynamics, more efficiency**

Six sizes, over 50 motor types – the MS2N series covers a wide range of applications from 0.8 to 148 Nm of continuous torque. Higher maximum torques of up to 360 Nm with increased overload capability and dynamics make these new servo motors even more flexible. The standard field weakening mode available in conjunction with IndraDrive drive controllers enhances the usable torque-speed range beyond the voltage limit.

Motors sizes MS2N07 and above come with optional integrated fans. These greatly increase nominal torque in the same construction size. Flexible options, e.g., when configuring the encoder accuracy classes, shaft options or choosing from the two motor designs, also meet the various requirements of modern automation.

**Benefits of special product features**

- High power density for compact machines: high torque density, increased speed range, high energy efficiency
- Single-cable connection for reduced installation effort: up to 75 m of cable without additional components
- Intelligent within IndraDrive system: servo motor as a reliable sensor and data source, real-time processing
Nexo cordless nutrunner: the most intelligent hand-held nutrunner in the world

Highly intelligent: with Nexo, the entire controller is located in the nutrunner – a worldwide innovation that makes many Industry 4.0 applications possible for the first time. The integrated control systems enable the wireless cordless nutrunners to be connected directly to the higher-level systems, for example, without any additional hardware in your network. It couldn’t be simpler – or more cost-effective.

Reliable and high-precision
Rexroth now puts the intelligence that’s needed for complex tightening tasks right in your hand: since the entire controller is in the tool, the Nexo doesn’t need any external control system. It can communicate directly with your servers since its browser-based operator control system is suitable for any operating system. So it saves on costs. Extremely accurate results are ensured by a precision action sensor/feedback device, which also offers the practical advantage of transmitting the tightening results directly to the large display. So your users are always in the picture.

Benefits of special product features
- Complete control system in the nutrunner: no additional hardware, fewer costs
- Large display: practical information is always in view
- High-precision measurement system: for the ultimate in precision torque and rotary angle sensing

Key technical data
- Max. speed: 880 rpm
- Max. torque: 65 Nm now available
- Sensing of torque and angle of rotation
- 2.4 and 5 GHz WIFI
- Incorporates illumination of the tightening location
- All versions also available with barcode scanner
- Extensive range of accessories
- Suitable for class A safety-related tightening tasks according to VDI/VDE2862
PQM Process Quality Manager: intelligently control processes, increase productivity

Detecting and avoiding deviations and errors immediately in the production process – not a problem with the new Process Quality Manager: An intelligent early warning system that reduces quality costs. Monitor and document your production processes securely and reliably. You can counteract any deviations from the planned process immediately, avoiding the production of defective parts. Your experts are notified of errors promptly and can respond immediately. And productivity increases.

Real-time control: via open interfaces, with all teams
Comprehensive analyses provide complete transparency, extensive reporting options and real-time notifications for stepping up processes – this is what the intelligent control management of today looks like. Browser-based and with open interfaces, the new Process Quality Manager by Rexroth notifies all interested parties of any deviations and errors quickly, easily and reliably. This multiplies expert knowledge and facilitates rapid, targeted responses. Not just intelligent, it also increases your productivity on a sustainable basis.

Benefits of special product features
← Open interfaces, browser-based GUI: for swift information flow
← Comprehensive analysis and reporting options in real-time: for complete transparency and a sustained increase in productivity
← Intelligent control management: multiplies expert knowledge and facilitates immediate response
← Early detection of process risks: allows for preventive measures and eliminates fault-related costs and downtime

Key technical data
← Browser-based GUI
← Compatible with any operating system (Windows, Linux, etc.)
← Integrated process data cockpit
← Tightening graphs and results in real-time
← High scalability
PRC 7300 medium-frequency welding controller: achieving optimal weld point quality faster

The latest generation of resistance welding control systems delivers what you are entitled to expect from the European market leader: a highly efficient, reliable, medium-frequency control system which is once again setting standards. With intuitive operation, state-of-the-art hardware and adaptive control – for ultra-fast commissioning, energy-saving control, and above all superb weld point quality. Even with complex plate thickness combinations. The automotive industry isn’t the only one that will want to get their hands on it.

Proven 100,000 times over and continuously improved

With the new PRC 7300, the specialists at Bosch Rexroth have once again improved a flexible basic concept that has proven itself 100,000 times over in tough industrial practice. So you can get going even quicker and save costs. A new intuitive user interface makes parameterization, visualization and diagnosis child’s play. The commissioning time is reduced by 90%! Basic settings and welding point optimization in five steps and in less than 10 seconds. The adaptive control system guarantees maximum weld point quality, minimal reworking, and the highest possible level of reliability. Even when welding aluminum and in the case of tricky combinations of metals. State-of-the-art semi-conductor technology and a flexible system architecture guarantee energy-efficient control at all times – 30% more economical when actually welding, up to 80% between weld operations.

Benefits of special product features

- Superb reliability due to adaptive control and monitoring (even in the case of tricky metal combinations and Al)
- Faster commissioning, visualization and diagnosis thanks to new intuitive user interface (90% reduction in commissioning time)
- Highly flexible and future-proof thanks to modular system architecture with integrated application layer
- Energy-efficient and cost-saving due to state-of-the-art hardware technology

Key technical data

- Medium-frequency control systems for applications up to 320 kA
- Adaptive control and monitoring
- Control of electronic servo drives
- Integrated plier front end
- Intuitive Windows-based and web-based user interface
- Standardized interfaces for factory network integration
Linear motion technology innovations: precise and efficient positioning, configuration by press of a button

Measure positions without contact, move heavy loads with high precision, or configure components quickly and easily online – with linear motion technology, Rexroth shows off its expertise in processes and practical requirements in a wide variety of applications, sectors and markets.
RSHP roller rail system high precision: never before have heavy loads been moved so precisely

High-performance machine tools also require a high-performance rail guide: Extremely heavy loads can be moved with unequaled care and precision using the latest generation of roller rail systems with their patented rolling element run-in. This offers best machining results and optimal surface quality.

The patented rolling element run-in ensures a high-precision effect
With the new RSHP roller rail system generation, Rexroth has expanded its range with a high-precision guide rail and a guide carriage that permits optimal quality due to its particularly quiet running behavior. The patented rolling element run-in provides for the high-precision effect: the run-in zone is optimized and adapted to the load. This allows you to achieve the best results and an unmatched surface quality in the machining process. With the RSHP you also profit from an optimized lubrication channel, which allows longer service intervals, and from a simpler type selection with 67% fewer variants.

Benefits of special product features
- Patented rolling element run-in with a high-precision effect
- Optimized lubrication channel for minimum oil consumption and longer service intervals
- 67% fewer guide carriage variants: for faster and simpler type selection and reduced inventory
- Extreme rigidity and durability: with significantly higher static and dynamic load ratings

Key technical data
- Load ratings: 30,300 N to 295,900 N
- Maximum speed: 4.0 m/s
- Maximum acceleration: 150 m/s²
- Lubrication: oil/grease
- Ambient temperature range: -10 °C to +80 °C
BSCL ball rail system: Mid-performance with more system options and reliable performance

Our BSCL ball rail linear guide systems offer reliable guidance of linear movement in industrial and commercial automation. Precision grinding technology used in our manufacturing process allows block and rail interchangeability within the BSCL family, giving you more design options in the mid-performance range.

Outstanding options, flexible assembly
BSCL complements the existing Bosch Rexroth linear guide portfolio with an economical system built for the mid-performance industry sector. BSCL ball rails are available in 6 sizes, 6 runner block types, 3 preload classes, and 3 accuracy classes. The ball rails can be easily customized to the desired length using simple hand tools and without the need for costly end machining. The new structural design of the BSCL delivers an optimum price to performance ratio.

Benefits of special product features
- Outstanding price to performance ratio
- Easy customization for quick delivery
- Flexible customer inventory and more system options with the same components
- Overall envelope in matching nominal widths is common with the BSHP line, giving you more design freedom in early machine concepts

Key technical data
- Nominal rail widths from 15 to 45 mm are available
- Speeds up to 3 m/s
- Maximum acceleration: 250 m/s²
- Lubrication: oil/grease
- Ambient temperature range: 0 °C to +80 °C
BSHP ball rail system: High precision with an innovative run-in specific to the operating load

The high-precision technology of the new BSHP ball rail systems offers many benefits. The run-in zone adapts individually to the respective operating load of the ball carriage, which ensures optimum running accuracy and extremely low frictional fluctuations. This in turn produces significant quality improvements. And the best thing is BSHP is available for all sizes, versions and classes of accuracy, which increases the dynamic load ratings and doubles the service life.

Rexroth HP technology in all classes
BSHP ball rail systems with HP technology have an innovative run-in zone that significantly increases quality: the steel inlays are not supported in the end zone by the ball carriage and can therefore be elastically de-formed. The run-in zone adapts itself individually to the current operating load of the ball carriage. As a result the balls run harmoniously without any impulse load into the support zone.

The result: very high running accuracy, very low frictional fluctuations and thus optimal machining results. The increased load ratings (26% better dynamic and up to 50% better static ratings) are at your disposal across all classes with the BSHP.

Benefits of special product features
- High-precision technology across all sizes and precision classes: 26% better dynamic and up to 50% better static load ratings all-around
- Downsizing possible: through improved load ratings
- Significant quality improvement: extremely high running accuracy, better processing results, higher surface quality
- Optimal rigidity and robustness: double the service life!
- Overall envelope in matching nominal widths is common with the BSCL line, giving you more design freedom in early machine concepts

Key technical data
- Nominal rail widths from 15 to 65 mm are available
- Dynamic load ratings: 3,900 N to 223,000 N
- Speeds up to 5 to 10 m/s
- Maximum acceleration up to 500 m/s²
- Lubrication: oil/grease
- Ambient temperature range: 0 °C to +80 °C
- Compatible with IMS measuring system
- Special features such as corrosion resistance are available
EMC-HD electromechanical cylinder: moving extreme loads with less energy

This robust electromechanical cylinder was developed for use in heavy-duty applications. As a complete building system with integrated planetary or ball screw assembly, it is designed for efficient operation even under harsh conditions.

A rugged, complete building system
The latest electromechanical cylinders were designed for long service life under tough conditions: Perfectly sealed for a high IP rating and tough corrosion protection. The precision-rolled screw assemblies position precisely and powerfully and feature high economic efficiency with low operating costs, as well as high energy efficiency. The configurable servo drive is freely programmable, process parameters can be modified with ease – allowing you to implement even complex traversing profiles with precision and adjust them at any time.

Benefits of special product features
- High energy efficiency and small environmental footprint
- No leakage
- Simple, rugged design for long service life, even in harsh environments
- Complete building system and multiple combination options for high flexibility to serve a broad range of applications
- Precise positioning, high dynamics, powerful drive and a long service life due to the use of precision screw assemblies
- Optional port for a one-point lubrication system reduces downtime and saves time and money
- Less design and installation work thanks to a complete, turnkey system
- Intelligent drive system for free programmability and implementation of complex traversing profiles

Key technical data
- Dynamic load rating (Cdyn): 50 to 470 kN
- Max. axial force: 290 kN (pull/push)
- Max. traversing speed: 1 m/sec
- Max. stroke: 1,700 mm
- Protection rating: IP65
- Connectivity with Sercos and Multi-Ethernet
EMC electromechanical cylinder: compact, precise and highly flexible

Every detail of the new EMC electromechanical cylinder reflects the system expertise of Rexroth in the consistent integration of proven proprietary technologies. The result is an actuator whose external geometry and method of operation is similar to a pneumatic cylinder, but is much more energy-efficient and flexible. This makes it more than just an alternative to pneumatic linear drives in many sectors.

Complete system: hygienic, variable, precise
Its high variability makes the new EMC so interesting for many industries and applications. This affordable, simple, basic cylinder can be adapted to practically any need thanks to numerous options. Hygienic, highly resistant to chemicals, perfectly sealed and with a high IP rating. These available options also ensure a long service life – even under harsh industrial conditions. The powerful EMC always performs with high efficiency and economy.

Benefits of special product features
- Hygienic design: high resistance to chemicals and cleaning agents
- Good sealing: IP65 rating, sealed against dirt and water from outside and lubrication leakage from the cylinder
- Optimized lubrication concept: optional port for a one-point lubrication system reduces downtime and saves time and money
- High-precision ball screw assemblies: for high performance with maximum cost-effectiveness
- Complete building system and great variability: ideally customizable to customer applications
- Complete, turnkey system: less design and installation effort
- Intelligent drive system for free programmability and implementation of complex traversing profiles

Key technical data
- Dynamic load rating (Cdyn): 2.5 to 93 kN
- Max. axial force: 55 kN (pull/push)
- Max. traversing speed: 1.6 m/sec
- Max. stroke: 1,500 mm
- Protection rating: IP54, IP65 optional
Easy Motion and Open Core Interface (OCI) for Handling: motion control made easy

Easily configure Cartesian robot motion with a simple Excel front end interface. How? Due to Open Core Engineering, motion control commands written in VBA can be loaded directly into Rexroth drives and PLCs. Commissioning, proof of concept, motion envelope proofs and much more just got way easier! Use the sample code as-is for training or simulation, tailor it to your needs, or base your own programs on it.

Easy Motion Test Drive: Free, and easy to use!
Try our Excel based sample code, using VBA and the Rexroth Open Core Interface (OCI) for Handling. Configure robot motion with no PLC language experience! Users can create their own motion control programming by reviewing the code provided and recreating, or even by translation to other programming languages.

Open Core Engineering includes libraries for most popular languages and platforms, including Java, LabView, Matlab, VB, C# and more. The Open Core Interface also provides direct access to control and drive functions with high-level language-based applications.

Benefits of special product features

← Control up to 64 axes, with 3 of them synchronized
← Speeds proof of concept, commissioning, and more
← Help with the test drive program is just an email away at appengreq.brl@boschrexroth-us.com

How to get the Easy Motion Test Drive download:
Visit the Bosch Rexroth USA website at www.boschrexroth-us.com/easyhandling or scan the QR code to open the download request page.
LinSelect: selection and sizing tool for linear axes and actuators

With the LinSelect tool, Rexroth fundamentally simplifies the selection of linear axes and actuators. The clear and intuitive user interface guides you to the ideal result step by step – saving time and money.

The ideal result in five steps
LinSelect uses design and application parameters to recommend matching products from the Rexroth range of linear motion systems. The tool also determines the appropriate motor and drive controller. Results are shown in detail, and product recommendations can be conveniently saved and shared through the project management feature. Selecting, ordering and obtaining CAD files for linear motion systems has never been easier.

Benefits of special product features
- Quick engineering: results in less than 15 minutes
- LinSelect combines years of application experience with a modern and intuitive user interface
- Seamless selection, configuration and ordering process
- Select mechanics, motor and drive combination with a single tool
- Precise and reliable results
- Always up-to-date: product data supplied continuously

Key technical data
- Select from more than 100,000 product combinations
- Interface to online configuration tool
- Several languages available
- Also available offline
IMS-A integrated measuring system: high-precision guidance and measurement

The integrated measuring system combines ball rail and roller rail systems with an absolute length measuring system in our new IMS-A product. The system accuracy of this inductive measuring system is comparable to high-precision glass scales and is therefore ideally suited for use in external measuring systems on machine tools.

Measuring inductively the absolute position with a resolution of 0.025 μm
The IMS-A provides you with a precision instrument that guarantees excellent workpiece quality through accurate position measuring. Thanks to the inductive, contactless measuring principle, the system functions wear-free, which reduces your downtimes. In addition, it is particularly compact thanks to the integration of the systems, which saves installation space.

Benefits of special product features
- Absolute position entry, without buffering battery
- High system accuracy
- Inductive, contactless measuring principle
- Measuring function integrated into the guideway
- Resistant to contamination without any additional measures
- Encoder signal types:
  - Hiperface
  - SSI
  - TTI square wave
  - 1Vpp

Key technical data
- Max. position resolution: 0.025 μm
- Pitch accuracy: ±3 μm/m
- Ball rail systems: sizes 20/25/30/35/45
- Roller rail systems: sizes 35/45/55/65
- Max. rail length: 4,500 mm ea.
- Interfaces: Hiperface, SSI, DRIVE-CLiQ, FANUC

DRIVE-CLiQ is a registered trademark of Siemens
Online screw assembly configurator: available online anytime

Rexroth presents the first online configurator for screw assemblies: Now you can quickly and easily design your specific solution or even order standard products 24 hours a day, seven days a week. With practical cost overviews and short delivery times.

Easy configuration, speedy delivery
Once again, Rexroth is one step ahead: with the new online configuration tool, screw assemblies can be ordered with unrivaled speed and ease. Practically integrated in the Rexroth eShop, you can order standard components directly or navigate through the image-guided configuration process to create your specific solution. While constantly being informed of the costs. 2D and 3D data is available for download in all common formats. Go online. Around the clock. It doesn’t get any easier.

Benefits of special product features
← Quick & easy design thanks to image-guided configuration
← Individual dimension inputs are checked for technical feasibility (red/green display) and plausibility
← Configuration tool integrated in eShop
← Order 24 hours a day, 7 days a week
← 2D/3D data available for download in all common formats
← Available online anywhere at anytime

Key technical data
← Complete size range represented
← Customer-specific end machining or according to the catalog
← All configuration options available
Innovations in assembly technology: powerful movement of parts and efficient acceleration of processes

Be it market-leading transfer systems that move workpieces of up to 400 kg, modular building systems that make planning a breeze, or interactive communication platforms and the latest ergonomics apps with live performance figures and analysis tools that speed up processes – Rexroth is just as innovative in assembly technology as in any other area. Take advantage of our process know-how. And of our advanced yet pragmatic solutions.
ActiveCockpit interactive board: view everything real-time, decide everything quickly – and collaboratively

As an interactive communication platform, ActiveCockpit processes and displays production data in real-time. IT applications from production planning, quality data management and e-mail are intelligently networked with machine and system software functions. All information is directly available to everyone on the line – for faster, informed decisions and simple process optimization.

For a wide variety of back-end systems, and for intuitive operation

You have never seen your KPIs quicker or more clearly: in real-time and always displayed consistently in predefined layouts, allowing for immediate on-site discussion and analysis within your team. Intuitive to use and scalable from a 4.7" mobile screen to a 65" UHD touchscreen. Back-end systems can be connected easily using an open interface. You can incorporate your company performance indicator standards without making any changes to them. Or simply set up your own favorites to existing charts, graphs, or reports. Whether you use the e-mail, chat or mobile functions, with the ActiveCockpit you can discover, collaborate, react, and resolve much more quickly and efficiently.

Benefits of special product features

- Make decisions quickly and efficiently on the shop floor
- Save time and avoid errors: with direct connection to any back-end system (ERP, MES)
- Customer-specific: integrate your own web applications as widgets
- Universal: communication tool for employees at all levels
- Clear: Structured and documented team discussions
- Customer-oriented and flexible configuration: thanks to intuitive web application
- Automatic meeting minutes function: saves time

Key technical data

- Browser-based software, can be extended via apps/widgets
- Connect to MES/ ERP back-end systems with i4.0 interface
- Scalable end devices: tablet, PC, touchscreen
- Comes with intuitive dashboard standard: customized configuration via administrator
- Functional data management: supports structured data storage and quick retrieval
ActiveMover: the new standard for short cycle times – more precise, faster, heavier loads

When you need to transport products with great speed and precision, the new linear motor transfer system from Rexroth sets new standards of performance: With a unique combination of speed, precision and load capacity, the new ActiveMover will increase your process quality, productivity and profitability, with every single workpiece.

**Key technical data**
- High repeatability: ±0.01 mm
- Max. speed: 150 m/min
- Acceleration of 4 g for 1 kg payload, 1 g for 10 kg payload
- Load per workpiece pallet up to 10 kg
- Workpiece pallet width 165 mm, for holding fixture < 500 mm
- Robust design
- Reversible operation
- Asynchronous and synchronous operation
- Standard interface for all process controls

**Improved processes, shorter cycle times, higher loads**
The ActiveMover has everything you need for highly precise transfers in short production cycles: You'll increase your process quality thanks to an extreme repeatability of ±0.01 mm – piece for piece precision without additional indexing. High traversing speeds and acceleration of up to 4 g allow for very short cycle times and increase your productivity. And, because a single pallet moves up to 10 kg and is freely programmable, you'll work more flexibly and efficiently, even when handling sensitive products. Could it get any better?

**Benefits of special product features**
- Precise: exact positioning of workpiece pallet thanks to an integrated measuring system, without additional indexing
- Fast: shorter cycle times thanks to high speed and acceleration, faster pallet changes
- Robust: powerful drive with up to 160 N per pallet plus a rugged design – for easy process integration and a wide range of applications
- Flexible: can be connected to any control system, every pallet is freely programmable and easy to change out
TS 5 transfer system: manage up to 400 kg with easier assembly and more flexibility

400 kg per workpiece is a hefty claim. But the new TS 5 transfer system can handle that easily – even in the harshest environments. With numerous improvements, such as new lift transverse units and drive units and a sleeker design, you now have more freedom in planning and assembly. An ideal, economic solution for any application.

Planned for flexibility, easily assembled, quick to start
The conveyor specialists at Rexroth have packed the TS 5 transfer system, the heavyweight in the Rexroth range, with even more practical features. With workpiece weights of up to 400 kg, the TS 5 shines as a rugged pacemaker, even in the harshest production environments – and all this with the largest possible degrees of freedom for you in planning space or layout. The latest generation of drive, lift traverse, line and positioning units or stop gates make planning a cinch now more than ever with the most user-friendly planning tool: MTpro. Even assembly is a piece of cake thanks to slimmer formats and enhanced modularity. You can’t get more flexibility when it comes to getting your application going.

Benefits of special product features
← Maintenance-free: friction roller conveyor with king shaft drive
← Modular: more flexible building system
← Fast: simple planning with high reliability through the use of MTpro

Key technical data
← Track width: 455 to 845 mm
← Max. total weight of workpiece pallet: 400 kg
← Conveyor speed: 2/6/9/12/15 or 18 m/min
← Max. section load: 380 kg/m
← Optional galvanized or nitro-carburated roller surface
VarioFlow plus chain conveyor: the modular system for quick assembly and quiet operation

Easy to configure with the MTpro layout designer, three-dimensional, modular, fast and error-free assembly, quiet and economical in operation – if you could wish for a conveying system, this is what it would sound like. Rexroth has implemented all of this in the new VarioFlow plus generation. A flexible modular system for a wide range of applications in a wide range of industries. VarioFlow plus now features an innovative drive concept and numerous complementary products. What more could you want?

Ingeniously simple to configure and economical to operate

Whether as an interlinking system on assembly lines, in the food and packaging industry or in the interlinking of machine tools, the new VarioFlow plus generation is impressive in a wide variety of applications due to its extremely fast assembly and its exceptionally economical and quiet operation. The modular building block concept and technical details, such as its rivetless assembly and the optimized gliding properties, are what make this conveying system so practical to use and universally deployable. Off you go with your project planning: layout planning is ingeniously simple with MTpro.

Benefits of special product features

- Extremely easy project planning: thanks to the modular building block concept and MTpro Layout Designer
- Rivetless assembly of the glide rail for fast, error-free construction and low-noise, maintenance-free operation
- Low friction: for long conveying segments per drive, low wear, low costs
- Ingenious and simple system of compatible modules, chains, and common spare parts offers flexibility without adding complexity
- Width and chain options to optimally match the transport need

Key technical data

- 6 chain widths from 65 to 320 mm
- Aluminum or stainless steel available in all widths
- FDA-compliant materials
- Conveyor speeds up to 100 m/min
- 12 chain types
- Numerous extras: modular carrier system, adjustment units for wedge conveyors, lateral guides, stainless steel rocker, etc.
- Separate frequency converter can be combined with any motor up to 0.55 kW
Ergonomics app Fit4Ergonomics: interactive notification, measuring, assessment

The latest generation of ergonomic assessment for assembly workstations is smart, fast, interactive – and works straight from your smart phone. With the new Ergonomics app from Bosch Rexroth, you can access a wealth of workstation design knowledge, checklists, and analytical and assessment tools at any time. You can also measure levels, such as noise and lighting, directly on site.

Direct from your cell phone: workstation designing made easy

With the new Ergonomics app by Bosch Rexroth, working on the ergonomic design of assembly workstations turns into an interactive experience. Using digital ergonomics checklists, workstations are assessed according to the latest ergonomics guidelines and interactive recommendations for optimization are produced.

The app does not just consider the workstation, but also the surroundings, such as dimensions, lighting and noise – all measured directly with a smart phone. You can then send the results via e-mail to all the interested parties. Everything from one app. Could it be any easier?

Benefits of special product features

← Knowledge portal provides faster access to all critical information
← Easy assessment with interactive ergonomics checks
← Direct on-site measuring from smart phone
← Simple creating, managing and tracking of projects
← Practical e-mail feature for ergonomics checks and project data

Key technical data

← Available free from the Apple App Store and Google Play Store
← Designed for smart phones
← Compatible with iOS versions 8.0 and higher/Android versions 4.2 and higher
← Also available offline
← Requires access to camera, photos/media, microphone
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